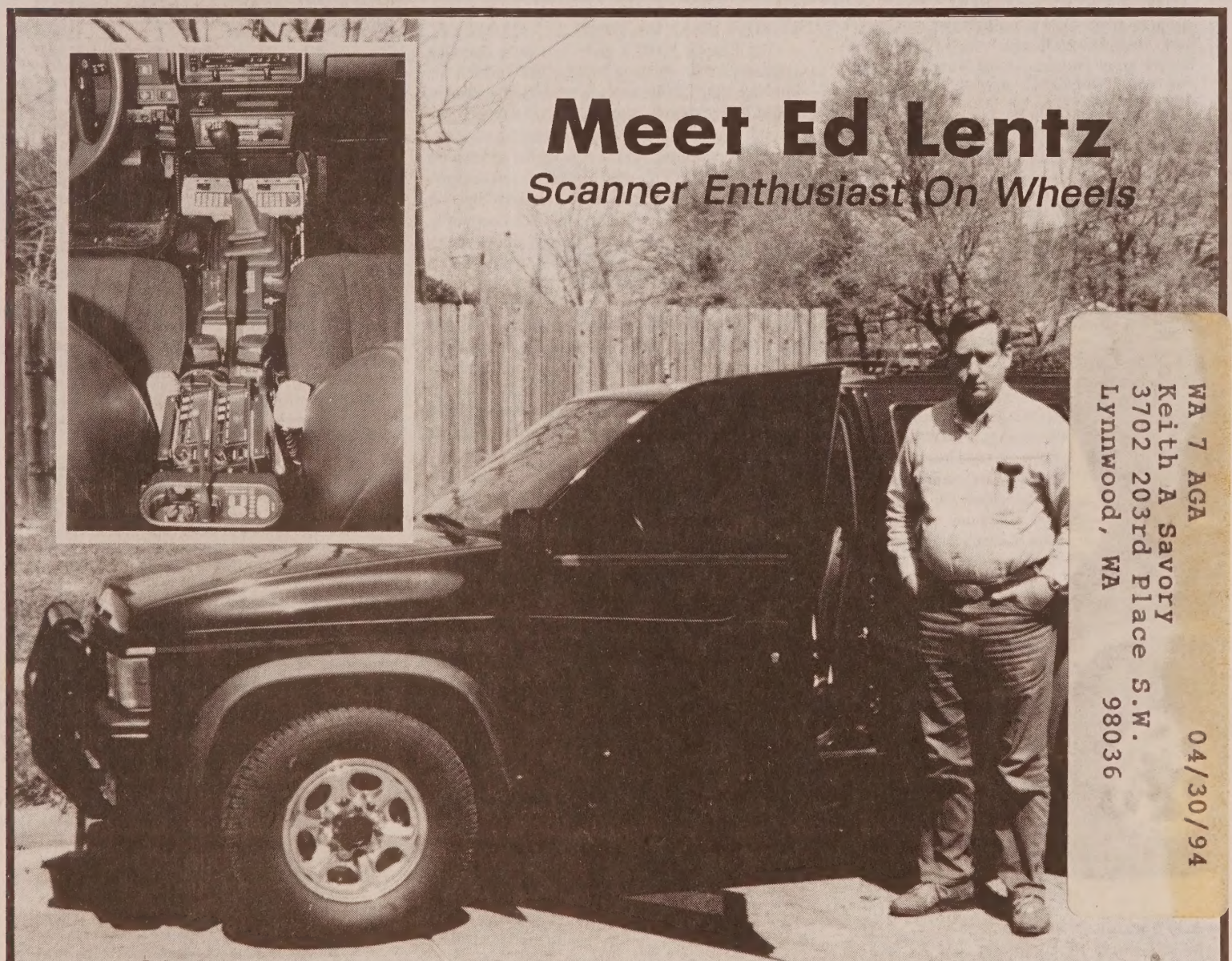
THE BEARCAT RADIO CLUB

$3.50

NATIONAL SCANNING REPORT

VOLUME 4, NUMBER 3 • MAY/JUNE 1993



Meet Ed Lentz

Scanner Enthusiast On Wheels

WA 7 AGA 04/30/94
Keith A Savory
3702 203rd Place S.W.
Lynnwood, WA 98036

Also Inside

- **The Saturation Force**
- **Radio At Work**
- **Two New Columns**

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Scanners/Shortwave/CB/Ham

COMMUNICATIONS ELECTRONICS INC.

Emergency Operations Center

We're introducing new Uniden *Bearcat* scanners that are just what you've been searching for. Order your *Bearcat* scanner today.

Radio Scanners

NEW! Bearcat® 2500XLT-E

List price $649.95/CE price $344.95/SPECIAL
400 Channels • 20 Banks • Turbo Scan
Rotary tuner feature • Auto Store • Auto Sort
Size: 2-3/4" Wide x 1-1/2" Deep x 7-1/2" High

Frequency Coverage	*Default Steps*
25.000 - 25.995 MHz. (AM)	5.0 KHz
26.000 - 28.995 MHz. (AM)	5.0 KHz.
29.000 - 53.995 MHz. (NFM)	5.0 KHz.
54.000 - 71.995 MHz. (WFM)	50.0 KHz.
72.000 - 75.995 MHz. (NFM)	5.0 KHz.
76.000 - 107.995 MHz. (WFM)	50.0 KHz.
108.000 - 136.995 MHz. (AM)	12.5 KHz.
137.000 - 173.995 MHz. (NFM)	5.0 KHz.
174.000 - 215.995 MHz. (WFM)	50.0 KHz.
216.000 - 224.995 MHz. (NFM)	5.0 KHz.
225.000 - 399.995 MHz (AM)	12.5 KHz.
400.000 - 511.995 MHz. (NFM)	12.5 KHz.
512.000 - 549.995 MHz. (WFM)	50.0 KHz.
760.000 - 823.995 MHz (NFM)	12.5 KHz.
849.0125 - 868.995 MHz (NFM)	12.5 KHz.
894.0125 - 1,300.000 MHz. (NFM)	12.5 KHz.

Signal intelligence experts, public safety agencies and *National Scanning Report* readers have asked us for a *handheld* scanner that can intercept just about any radio transmission. The new Bearcat 2500XLT is just what you've been waiting for. It can store frequencies such as police, fire, emergency, race cars, marine, military aircraft, weather and other broadcasts into 20 banks of 20 channels each. The new rotary tuner feature enables rapid and easy selection of channels and frequencies. With the AUTO STORE feature, you can automatically program any channel. You can also scan all 400 channels at 100 channels-per-second speed because the Bearcat 2500XLT has TURBO SCAN built-in. To make this scanner even better, the BC2500XLT has AUTO SORT - an automatic frequency sorting feature for faster scanning within each bank. Order your scanner from CEI now.

For more information on Bearcat radio scanners or to join the Bearcat Radio Club, call Mr. Scanner at 1-800-423-1331. To order any Bearcat radio product from Communications Electronics Inc. call 1-800-USA-SCAN.

Great Deals on Bearcat Scanners

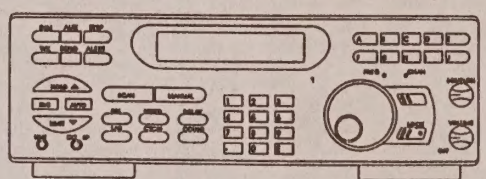
NEW! Bearcat 890XLT-E base/mobile	$254.95
NEW! Bearcat 2500XLT-E handheld	$344.95
NEW! Bearcat BCT2-E info mobile	$139.95
NEW! Bearcat 350A-E info mobile	$119.95
NEW! Bearcat 700A-E info mobile	$169.95
NEW! Bearcat 148XLT-E base	$94.95
Bearcat 800XLT-E base/SUPER SPECIAL	$199.95
Bearcat 760XLT-E base/mobile/SPECIAL	$229.95
Bearcat 560XLA-E base/mobile	$89.95
Bearcat 200XLT-E handheld/SPECIAL	$208.95
Bearcat 100XLT-E handheld	$149.95
Bearcat 70XLT-E handheld/SPECIAL	$119.95
Bearcat 65XLT-E handheld/SPECIAL	$99.95
Bearcat 855XLT-E base	$159.95
Bearcat 210XLT-E base/SPECIAL	$119.95
Bearcat 172XL-E base	$109.95
Bearcat 147XLT-E base	$83.95

NEW! Bearcat® 890XLT-E

List price $489.95/CE price $254.95/SPECIAL
200 Channels • VFO Control • 10 banks
Turbo Scan • Weather Alert • Priority channels
Auto Store • Auto Recording • Reception counter
Size: 5-1/4" Wide x 6-15/16" Deep x 1-5/8" High

Frequency Coverage	*Steps*
29.000 - 53.995 MHz. (NFM)	5.0/12.5/25.0 KHz.
108.000 - 136.995 MHz. (AM)	5.0/12.5/25.0 KHz.
137.000 - 173.995 MHz. (NFM)	5.0/12.5/25.0 KHz.
216.000 - 224.995 MHz. (NFM)	12.5/25.0 KHz.
225.000 - 399.995 MHz (AM)	12.5/25.0 KHz.
400.000 - 511.995 MHz. (NFM)	12.5/25.0 KHz.
806.000 - 823.995 MHz (NFM)	12.5/25.0 KHz.
849.0125 - 868.995 MHz (NFM)	12.5/25.0 KHz.
894.0125 - 956.000 MHz. (NFM)	12.5/25.0 KHz.

The Bearcat 890XLT gives you pure scanning satisfaction with amazing features like Turbo Scan. This lightning-fast technology enables the Bearcat 890XLT to scan and search up to 100 channels per second. Because the frequency coverage is so large, a very fast scanning system is essential to keep up with the action. That's why Uniden's latest technology, *Turbo Scan* is built into our new Bearcat scanners. Other features include ***VFO Control*** - (Variable Frequency Oscillator) which allows you to adjust the large rotary tuner to select the desired frequency or channel. ***Weather Alert*** - Lets your scanner function as a severe weather warning radio. ***Auto Store*** - Automatically stores all active frequencies within the specified bank(s). ***Auto Recording*** - This feature lets you record channel activity from the scanner onto a tape recorder. You can even get an optional ***CTCSS Tone Board*** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. ***10 banks*** - Each bank contains 20 channels, useful for storing similar frequencies in order to maintain faster scanning cycles. For maximum scanning enjoyment, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle's fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **BC002** CTCSS Tone Board $54.95. Order your BC890XLT from CEI today.



CB/GMRS Radios

The new Uniden GMR100 is a handheld GMRS UHF 2-way radio transceiver that has these eight frequencies installed: 462.550, 462.725, 462.5875, 462.6125, 462.6375, 462.675, 462.6625 and 462.6875 MHz. This one watt radio comes with flexible rubber antenna, rechargeable ni-cad battery, AC adapter/charger, belt clip, F.C.C. license application and more.

NEW! Uniden GMR100-E UHF GMRS Handheld	$159.95
NEW! Uniden GRANTXL-E SSB CB Mobile	$149.95
NEW! Uniden PC76XL-E CB Mobile	$99.95
NEW! PRO320XL-E CB Handheld/Mobile	$69.95
Uniden PRO330E-E CB Remote	$99.95
Uniden PRO810E-E SSB CB Base	$158.95
Uniden PC122-E SSB CB Mobile	$107.95
Uniden PC66A-E CB Mobile	$78.95
Uniden PRO510XL-E CB Mobile	$36.95
Uniden PRO520XL-E CB Mobile	$49.95
Uniden PRO538W-E CB & Weather	$69.95

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ICOM R1-E ultra compact handheld	$439.95
ICOM R100-E mobile	$589.95
ICOM R71A-E base (add $29.00 shipping)	$989.95
ICOM R72A-E base (add $29.00 shipping)	$899.95
ICOM R7000-E base (add $39.00 shipping)	$1,149.95
ICOM R7100-E base (add $39.00 shipping)	$1,199.95
ICOM R9000-E base (add $89.00 shipping)	$4,699.95
Grundig Satellit 700-E portable	$459.95
Grundig Satellit 500-E portable	$359.95
Grundig Cosmopolit-E with tape recorder	$179.95
Grundig Yacht Boy 230-E portable	$139.95
Grundig Traveller 2-E portable	$79.95
Sangean ATS606-E ultra compact	$149.95
Sangean ATS800-E portable	$79.95
Sangean ATS803A-E portable	$159.95
Sangean ATS808-E portable	$159.95
Sangean ATS818-E portable without tape recorder	$189.95
Sangean ATS818CS-E with tape recorder	$209.95
Sangean ANT60-E portable shortwave antenna	$14.95

Weather Stations

Public safety agencies responding to hazardous materials incidents must have accurate, up-to-date weather information. The Davis Weather Monitor II is our top-of-the-line weather station which combines essential weather monitoring functions into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Our package deal includes the part #7851-E Rain Collector, and the external temperature/humidity sensor, part #7858-E. The package deal is order #DAV1-E for $449.95 plus $15.00 shipping. If you have an IBM PC or equivalent, when you order the optional Weatherlink computer software part #7862-E for $149.95, you'll have the world's most powerful computer weather station at an incredible price.

Other neat stuff

ICOM GP22-E Global Positioning System	$739.95
WR200-E Weather Radio with storm alert	$39.95
RELM RH256NB-E VHF synthesized transceiver	$289.95
Ranger RCI2950-E 25 watt 10 meter ham radio	$244.95
Ranger RCI2970-E 100 watt 10 meter ham radio	$369.95
Uniden LRD9000W-E Laser/Radar Detector	$159.95
PWB-E Passport to Worldband Radio by IBS	$12.95
LIN-E Latest Intelligence by James Tunnell	$12.95
NPD-E Uniden National Police Directory	$12.95
FBE-E Uniden Eastern Frequency Directory	$12.95
FBW-E Uniden Western Frequency Directory	$12.95

Buy with confidence

It's easy to order from CEI. **Mail orders to:** Communications Electronics Inc., Emergency Operations Center, P.O. Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add $15.00 per radio for U.P.S. ground shipping and handling in the continental U.S.A unless otherwise stated. Add $6.00 shipping for all accessories and publications. Add $6.00 shipping per antenna. For Canada, Puerto Rico, Hawaii, Alaska, P.O. Box, or APO/FPO delivery, shipping charges are two times continental U.S. rates. Michigan residents add state sales tax. No COD's. 10% surcharge for net 10 billing to qualified accounts. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. We welcome your Discover, Visa, American Express or MasterCard. Order toll-free by calling 1-800-USA-SCAN. For information or if outside the U.S.A. call 313-996-8888. FAX anytime, dial 313-663-8888. Order your electronic equipment from Communications Electronics Inc. today.

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Emergency Operations Center

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The new PRS-100 from Radio Shack – a convenient way to keep in touch – and two new frequencies to watch out for!

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Cover photo: Ed Lentz (TX 5 AKR) of Houston, Texas poses in front of his mobile scanning machine. Photo by Perry Joseph, (MO 0 ACG).

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Opening Thoughts...

We were about three-quarters of the way through this issue of *National Scanning Report* when an idea hit me. "Maybe we could make a few small changes in the magazine to make it better," I started to say. Suddenly, staff went flying everywhere. People ran for cover. Writers hung up on me. One person even threatened to take early retirement – even though she's only 35 years old. You see, when I get one of these "ideas," it usually ends up not in a few small changes but a major make-over for the magazine and whether you share this particular vision or not, everyone at *NatScan* carries the load.

This month, you'll see the results of some of these changes. Some are subtle. Others not so subtle. For example, you'll see expanded coverage of police, fire and emergency medical monitoring in one combined column. There are, of course, thousands of other things to listen to on a scanner and, the truth be known, we weren't giving them a fair shake. For example, did you know that there were still lots of car phones – not cellular phones – but older-style car phones still on the air? Want to know the hottest of the hot new frequencies? Radio Shack has just introduced a new radio and it's got 2 crystals: If Radio Shack introduces a new radio, you can bet it will sell and you can bet that we've just stumbled on two hot new frequencies. You'll find out about these and other tasty monitoring tid-bits in the new "Scanning Around" column. We're also honored to welcome Gene Hughes to our staff of writers. Gene, as many of you know, is the editor of the *Police Call* frequency directories and the dean of scanning in the United States. If anyone in this hobby ever deserved a statue besides me, it would be Gene. Check out his scanning basics column called "Scanning School."

Finally, we've even added a new "projects" column – things you can do yourself to enhance your scanning power.

Add to this exciting mix Norm Schrein's incredible report on Puerto Rico's Saturation Force, Bob Coburn's run down on business frequencies, and the story about Texas mobile scanning legend, Ed Lentz (who, I am told on good authority, has been known to smile on occasion – see Ed's beaming face on the cover of this issue) and you've got one hot tamale. On a serious note, I would like to thank everyone on staff who put in such incredible hours – and I do mean above and beyond the call of duty – to make the "small" changes you see here and get this issue out. Yes, it's probably a little late. But I think it's worth the wait.

Happy scanning!

Larry

Larry Miller,
Publisher

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SCANNER WORLD EXCLUSIVE

UNIDEN BEARCAT BC205XLT

$239.99 *($8.00 shipping)*

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHZ.* Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna carry case are all included. Size is 2-11/16"Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr. warranty $29.99, 3 yr. extended warranty $39.99.)
(*Excludes Cellular)

#CC-008 Heavy Duty Leather Carry Case . **$27.99**

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BEARCAT BC55XLT	108.99	(7.00)
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BEARCAT BC142XL	94.99	(7.00)
BEARCAT BC147XL	99.99	(7.00)
BEARCAT BC200XLT	279.99	(7.00)
BEARCAT BC205XLT	239.99	(8.00)
BEARCAT BC310A	85.99	(7.00)
BEARCAT BC330A	109.99	(7.00)
BEARCAT BC400XLT	99.99	(7.00)
BEARCAT BC560XLT	109.99	(7.00)
BEARCAT BC760XLT	269.99	(7.00)
BEARCAT BC800XLT	249.99	(8.00)
BEARCAT BC855XLT	186.99	(8.00)
BEARCAT BC950XLT	249.99	(7.00)
COBRA SR901	74.99	(6.00)
MIDLAND CB Radios	*In Stock*	
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BC002	59.99	GRE8002	79.99
PS001	12.99	GRE-HH	54.99
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BP70	16.99	FBE	5.99
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Scanner Modification	17.99

RELM RH-256NB HIGH BAND TWO-WAY RADIO

SPECIAL PACKAGE DEAL

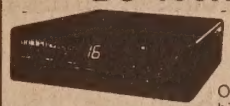
$339.99

(Plus ($9.00 Shipping Each)

16 channel digital readout two-way radio. Covers high band frequency range of 148-162 MHz without retuning. Perfect two-way radio for ambulance, police, fire, tow trucks, taxis, commercial companies who use this band. Features include CTCSS tones built-in, priority, 25 watts output, channel scanning, back lighted keyboard, message light, time out timer, scan delay, external speaker jack. Size is 2¾"Hx6½"Wx10¾"D.

SPECIAL PACKAGE DEAL includes RH-256NB, mobile microphone, ¼ wave body mount antenna, mobile mounting bracket and mobile power cord all for the low price of $339.99

UNIDEN BEARCAT BC-400XLT



$99.99 *($7.00 shipping)*

Our best selling mobile scanner. 16 channel, AC DC programmable, digital, AC/DC cords, telescopic antenna, mobile mounting bracket, weather search, priority, 29-54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jack.

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100 Channel Digital Programmable Hand-Held Scanner

$159.99

($7.00 shipping)

Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz), 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, carry case.

SANGEAN ATS-803A

SHORT WAVE RECEIVER

$168.99

($7.00 shipping)

AM/FM/LW and 12 shortwave bands plus FM stereo, BFO for SSB reception, clock radio. Includes AC adapter, telescopic antenna, stereo headphones, and shoulder strap.

BEARCAT BC-147XLT

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$99.99 *($7.00 Shipping)*

Programmable, digital, AC/DC operation. Frequency coverage 29-54 MHz, 136-174 MHz, 406-512 MHz. Weather button, priority, lockout button, squelch includes AC adapter, telescopic antenna.

SPECIAL!! LOWEST PRICE EVER FOR A PROGRAMMABLE SCANNER

Cobra

SR-901

AVAILABLE ONLY FROM SCANNER WORLD

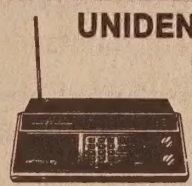
ONLY! **$74.99** Each

(Plus $6.00 Shipping Each)

$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 400-512 MHz, squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructrions. Size: 7¼" W x 2" H x 7¼"D. One year factory warranty.
(Optional mobile cigarette lighter cord #901MPC **$4.99**)

UNIDEN BEARCAT BC 800XLT

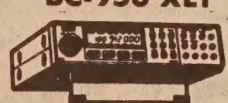


DIGITAL BASE SCANNER

$249.99 *($8.00 Shipping)*

Receive police, fire, ambulance, cordless phones, marine, trains, weather, ham, stock cars, public service plus much more. Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-912 MHz (continuous). 40 channels, AC/DC operation, digital programmable, memory backup requires 2 AA batteries (not included), telescopic antenna included, AC power cord included, external speaker jack, external antenna jack. Dimensions: 9¼D x 4½"H x 12½"W. Channel lockout, direct channel access, scan delay, priority, digital display, auto weather button, automatic search, track tuning.

UNIDEN BEARCAT BC-950 XLT



$249.99 *($7.00 shipping)*

Digital Programmable 100 Channel Scanner

BC-950 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-954 MHz (excludes cellular). Features compact size of 6-5/16"Wx1-5/8"Hx7-3/8", scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search, direct channel access, track tuning, service search including preprogrammed frequencies by pushing a single button for police fire/emergency, aircaft, weather, and marine services plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only $34.99 plus a CTCSS tone board is available for only $59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #950 MPC $4.99.

UNIDEN MR 8100

SPECIAL SALE PRICE ONLY **$289.99** *($10.00 Shipping Each)*

100 channel digital programmable mobile scanner, turbo scan up to 100 channels per second, lockout, priority, built-in automatic 2 second delay, dimmer control, back lighted keyboard, track tuning, direct programming of frequencies from front keyboard plus you can also program MR 8100 from your IBM compatible PC computer with software and cables included with scanner from Scanner World. Frequency coverage: 29-54 MHz, 118-174 MHz, 406-174 MHz, 406-512 MHz, 806-956 MHz. Dimensions: 7.9"W x 5.8"H x 1.9"D. Earphone jack, BNC antenna jack, DC power cord, mobile mounting bracket, internal memory backup, bank scanning; 10 banks of 10 channels in any combination.

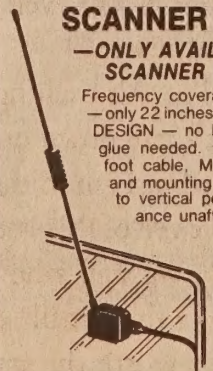
MODEL: FB-911 **ORIGINAL FIRE BOX PHONE**

$54.99 *($5.50 Shipping Each)*

13 memory phone, 3 direct access emergency memories, auto redial, ringer on/off, top light flashes when telephone is ringing, tone/pulse switchable, desk/ wall mount, front door closes for authentic fire box appearance, FCC approved. Size: 16"Hx8½"Wx7"D.

GM-1™A GLASS MOUNT SCANNER ANTENNA

—ONLY AVAILABLE FROM SCANNER WORLD—



Frequency coverage 25-1200 MHz — only 22 inches tall. NEW REVISED DESIGN — no holes to drill — no glue needed. Complete with 17 foot cable, Motorola connector, and mounting hardware. Swivels to vertical position — performance unaffected by moisture on the window. Made in USA.

SPECIAL

$39.99

($4.00 Shipping Each)

GLASS MOUNT ANTENNAS FOR TRANSCEIVERS

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GM-27	27 MHz Low Band for CB	$39.99 ($4.00)
GM-155	144-174 MHz High Band	$39.99 ($4.00)
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Radio In Action Radio In Action Radio In Action

Scanner Saves Two From Poison

Late one evening when Wayne Spaulding was listening to cordless phones on his scanner he heard someone talking about "arsenic." He left the scanner on, started his tape recorder, and went to bed. The next morning he listened to the tape and called police. The conversation Spaulding captured on tape was between two Mesa, Arizona, teenagers as they plotted to poison a teacher and a classmate. Police then played the tape for the targeted teacher who recognized the voices of two students. The 16- and 17-year-old high school sophomores were detained by police. Investigators found a plastic bag containing a fatal dose of drain cleaner in the pocket of the 17 year old. Both admitted to the murder plot.

On the tape, the two finalized plans to put liquid or powdered poison in the teacher's coffee or soda. They would slip the poison in the girl's food or drink. "If she does die, they aren't going to know. You can't tell if someone dies from poison," one said on tape. He said that authorities would suspect she died from an overdoes of marijuana. One suspect, according to the Phoenix, Gazette, boasted that he had once poisoned a dog that died in an hour and "nobody found out." "How come you won't kill somebody yet?" one youth asked. "I don't know," the other replied. "I probably will someday." The two then laughed and talked of going to prison together. Said Spaulding, "It was lucky that I just happened to hear these kids...I don't know what would have happened if they hadn't been caught."

Cell Phone Fun

You never know who you're going to hear if you happen to accidently scan across the cellular phone bands – unless you live in Boston or Washington.

According to newspaper reports, U.S. Representative Joe Kennedy II ran up nearly $21,000 in phone calls from his cellular telephone during the 1992 election. Reports show that during the 1992 race, Kennedy spent more on his car phone than any of the 405 House incumbents or their challengers. That year, Kennedy's cell phone bill was a mere $16,831.

BOSTON HERALD '93 HILBERT
JOE KENNEDY SPENT $21,000 ON CAR PHONE CALLS DURING HIS '92 CAMPAIGN...BUT CONSIDERING THE STEEP COMPETITION, THESE CALLS MUST HAVE BEEN VERY IMPORTANT...
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COURTESY BOSTON HEARLD

L.A. Gang Goes Scanner-Less

A Los Angeles County judge has barred a San Fernando Valley street gang from carrying or using scanners. Superior Court Judge John Major said, "The gang's intricate system involves the use of many ordinarily harmless objects and activities to commit crimes and render this community helpless and under siege." The order also forbids the gang from carrying any object that could be used as a deadly weapon and from using or carrying other articles commonly used for communications, such as pagers, binoculars, flashlights, cellular phones and whistles.

Radio In Action Radio In Action Radio In Action

Phony Cops Use Scanners

Chicago Police Department Officer Pat Camden says, "It's getting hard to tell the good guys from the bad buys without a scorecard." Camden ought to know, his city has been hit by a rash of fake cops lately in a trend growing throughout the country. In Chicago, phony cops are robbing motorists while monitoring the locations of real police officers on scanners. A recent episode of ABC-TV's 20/20 showed a table full of police equipment, including a BC200XLT handheld scanner. If you thought you could tell a real cop from a phony one by the sound of his police radio, think again. Impersonators are strapping on scanners and taking to the streets.

Scanner Listener Helps Police Nab Druggies

A scanner listener who happened to be listening to the cordless phone bands in San Antonio, Texas, heard a women set up a drug deal. The Bexar County Sheriff's office received a call from a man who said he heard a conversation in which a woman asked a man if he could get her some cocaine. The woman then gave the man her address. Sheriff's officers quickly arranged a stake out and arrested 19 year old Mark Biggs with possession and delivery of psilocybin mushrooms, a hallucinogenic drug. A second man who waited in the car was charged with possession of marijuana.

800 MHz Health Threat

Almost 15 percent of New York City's female paramedics and emergency medical technicians are affected by gynecological disorders that some are blaming on their new 800 MHz radios. Some of the women are refusing to carry the more powerful radios that they feel are linked to high rates of miscarriages, menstrual problems, cervical abnormalities and cancer. According to the union representing Emergency Medical Service workers, 100 of the city's 680 female paramedics and technicians may be affected. The city replaced its 400 MHz radios in 1989 with new 800 MHz Motorola models. Motorola insists its radios are safe. "So why do I have dyplastia [a precancerous condition of the cervix]?"asks 32 year old technician Colleen Enderly. "I don't smoke. I eat a healthy diet. No one in my family has dysplasia except me."

MARITIME
FREQUENCY DIRECTORY
HF - VHF - UHF - 800 Mhz
Robert Gad
Robert A. Coburn, Editor

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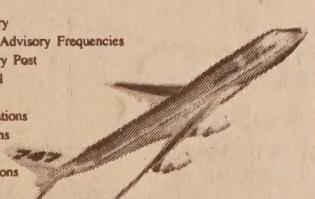

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Goodbye, Virginia CB

State Police in Virginia have given up on CB radio. The "good buddy" radios will no longer be installed in the state's newest 325 cruisers. Police defend the move, saying that CB radios have fallen victim to newer techology that requires a thicket of antennas, including hi-tech stolen auto tracking systems. "We're having a space problem," says Virginia State Police spokesman, Charled Vaughn. The American Automobile Association predicts dire consequences, saying that with the loss of CB, "It's going to be motorists' roulette out there [on the highways]." Some police agree. One unidentified trooper complained that "They're destroying a vital link the public has with the state police."

Putting Radios Back in Patrol Cars

The Charlotte City council recently approved the use of some $500,000 in confiscated drug money to equip police officers with mounted radios for their patrol cars. Ever since the city changed over from a 450 MHz system to an 800 MHz system, officers have had to fumble with a holster mounted radio or rely on a complicated back-up system connected to the car's Mobile Digital Terminal. There were no regular radios mounted in the cars. "Try to imagine being in a high speed chase with one hand on the wheel and the other fooling with the radio in your holster or on your shoulder," said police communications supervisor Jimmy Jones.

The Official National Scanning Report
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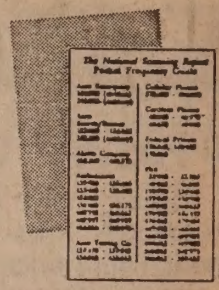

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--- Don't Leave Home Without It!

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FCC Reduces Federal Deficit Again

Austin, Texas based Conquest Airlines has received a $8,000 fine from the U.S. Federal Communications Commission. According to the FCC, Conquest operated a radio transmitter in Corpus Christi without a license. The frequency was used between pilots and ground crew.

John Walters, president of Conquest Airlines, called the lack of license "an oversight on our part. [We didn't get] the proper papers signed. It's a minor technical thing." Walters said that he did not expect to have to pay the fine. FCC public affairs specialist, Rolando Gallegos agreed that the FCC does somtimes consider reducing fines in some situations, but said that he doubted Conquest would get off the hook. "They were really caught red-handed," said Gallegos.

America's Most Gullible

A hoax perpetrated by a radio station in San Diego, California, had traffic tied up for hours around a small airport as hundreds turned out for what they thought would be a once-in-a-lifetime experience. KGB-FM DJ, Dave Richards, told listeners that the space shuttle Discovery was being diverted from Edwards Air Force Base to Montgomery Field -- a tiny airport with a short 2,400 foot runway located in the middle of a crowded residential neighborhood. By 8:30 a.m., over a thousand people had turned up, many with kids in tow and video cameras in hand.

Airport manager, Tom Raines, was reportedly "furious" but not as mad as local police who had to dispatch dozens of motorcyle officers to the scene. Police spokesman, Bill Robinson, said that the station is being billed for "manpower hours," and should they refuse to pay, [City Attorney] John Witt "might have an answer for them." Says DJ Richards, " I was just looking for a good scambo... I just light these bombs and then I run away."

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Ride Along with Mobile Scanning Enthusiast, Ed Lentz

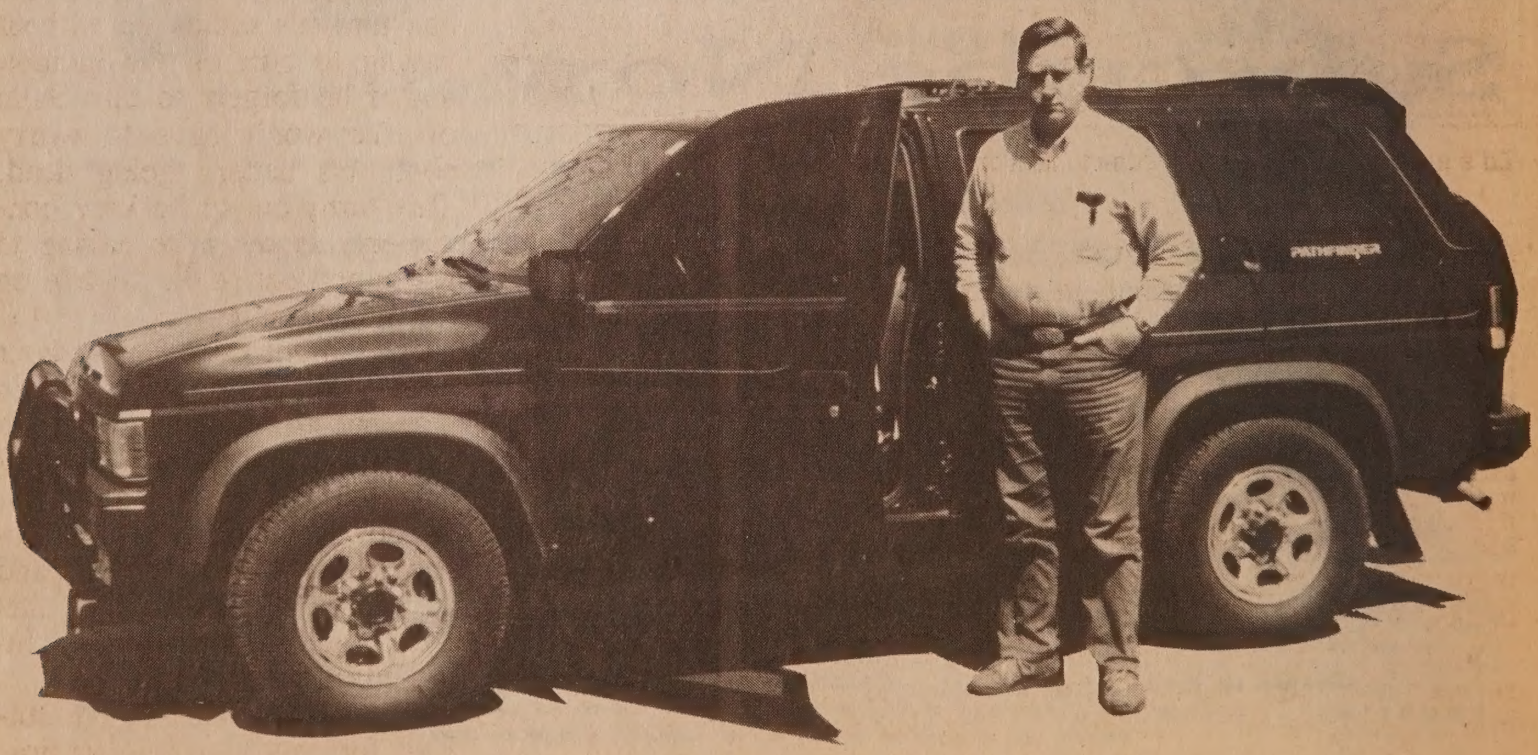
BY PERRY JOSEPH

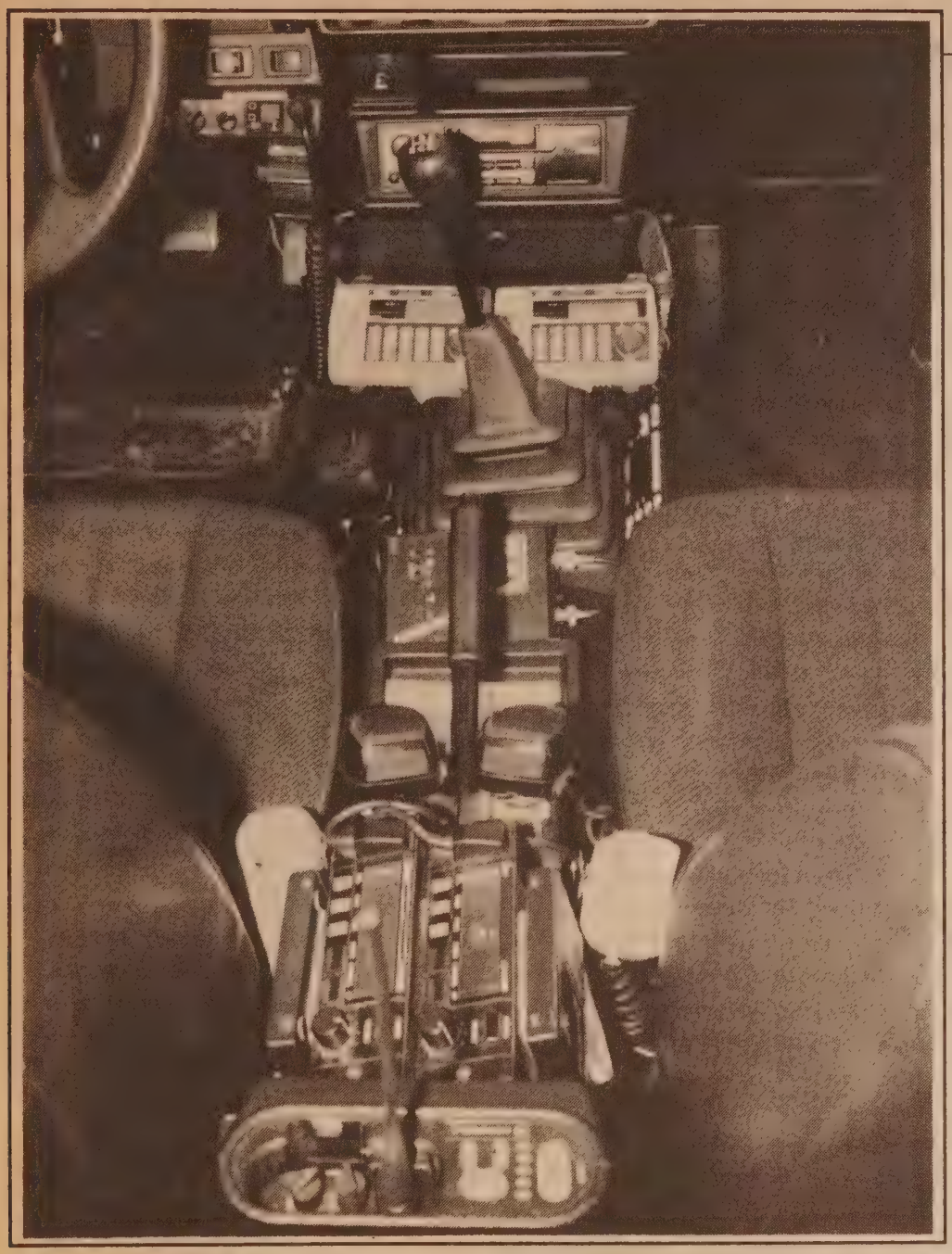
A Night Out with the Boys & the Scanners

For years, I have relied on my imagination to visualize the emergency events I listen to on my scanner. In a number of cases, I could actually see these events as they were covered by the local television stations. But in all cases, I wondered what it would be like to actually be there as the action occurred. Ed Lentz had been doing this for many years and was going to give me a first hand look at how this was done.

As the plane arrived in Houston, Texas, I recalled my first meeting with Ed and how intrigued I was with the multi-scanner installation in his truck -- no less than seven radios running at the same time. Unfortunately, our first meeting had been short and I was making up for it with this weekend trip.

Ed's setup is nothing short of awe-inspiring. Mounted under the center console are two AOR AR-2515 scanners. Under the dash by the steering wheel, a Uniden CB radio. On the right side of the transmission hump, a Motorola Spectra two-way radio capable of listening to the 800 MHz "trunked" calls. Just behind the stick shift is a frequency counter. Towards the rear of the center console between the front seats were two AOR two-way radios; one for VHF and the other for UHF.





Ed's awe-inspiring line-up of communications gear in his Nissan Pathfinder.

And behind the center console, a Motorola Saber handheld UHF two-way radio sat in a Saber Vehicle Adaptor which will convert a handheld to a mobile radio -- complete with amplifier and external speaker. The Spectra and Saber radios are identical to those used by many Police and Fire departments.

In addition to the radios installed in the vehicle, Ed brings along several handheld scanners, a handheld cellular telephone, and an 8mm camcorder, all of which were carried in a medium size padded case. The case is also filled with other essential accessories such as earphones, a clip-on speaker and other tools necessary for field repairs or adjustments.

Whenever we stopped for food or coffee, Ed would clip a handheld scanner onto his belt and fasten a small clip-on speaker to his shirt lapel so as not to disturb others and we wouldn't miss out on any action. The camcorder could be used to tape any major events. If you were lucky enough to be at the right place at the right time, you could beat out the other local news people and make a few bucks by taping a major fire or accident. And the cellular telephone came in handy to tell his wife not to wait up.

Of course, the vehicle has an elaborate alarm setup which Ed can turn off with a remote control. The alarm automatically turns itself on and locks all the doors after leaving the vehicle for a minute or so.

Because of the number of radios in use, all of the radios are hooked up directly to a 35 amp solenoid mounted close to the battery which reduces wear-and-tear on the vehicle's electrical system. There is an adjustable timer installed to the solenoid which will shut off the radios if they are left on for more than two hours. Ed can turn his radios on without having to turn on the ignition and if he forgets to turn them off, he won't have to worry about his battery going dead. This turns out to be very convenient, as we were having to get in and out of the vehicle on many occasions.

No radio is complete without an antenna. The two-way radio antennae were mounted outside and the scanner antennae were mounted inside along the glass windows. The internal antennae weren't very visible and therefore disguised the fact there were so many radios installed in the vehicle.

External speakers were utilized for several of the radios,

one under each seat and another mounted under the dash on the passenger side. The remaining radios used their internal speakers. The arrangement made it easy to identify which radio was "talking" based on the direction the sound was coming from. A convenient light secured to an adjustable goose neck attached to the ceiling allowed you to illuminate the displays and controls of any of the radios.

Of course, no mobile scanning operation would be complete without a binder with listings of all the frequencies programmed into each radio along with street guides of Houston and several flashights; one of which was plugged into a charger eliminating the possibility of dead batteries.

Ed owns and operates his own local UHF repeater which facilitates communications between himself and several other mobile scanner listeners. It operates on one of the GMRS frequencies which is set aside by the FCC for personal communications. This allows them to be in different locations and let each other know what is happening. This is particularly useful if multiple events are occurring; you can pick and choose the most exciting events. They could also communicate with each other as well as the local police using CB radios. Most of the time, the UHF radio is used for privacy as well as distance not afforded by the CB radio.

Our adventures started on Friday evening at around 10:00. Normally Ed starts earlier but because he had just finished working a double shift, an hour or so of sleep was needed before we "hit the streets". We met up with Gene, a friend of Ed's, at a local convenience store. Gene and Ed assist a neighborhood Community Watch program and can be found patrolling the area on most weekends. Gene, like Ed, is also equipped with many scanners, two-way radios and the like. When the two vehicles were parked next to each other the sound of the combined chattering radios was extremely chaotic. After picking up our cups of coffee, we set out to find some action.

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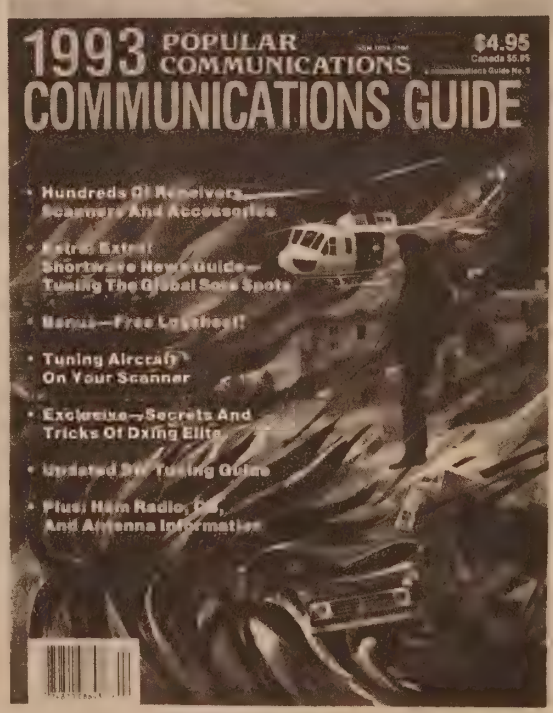

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Blame it on an unusually cold night or blame it on our late start, we were only able to hear the action instead of see it. And what action we did hear was too far away for us to get there soon enough to witness anything. That didn't bother me as I was busy watching and listening to the radios and observing other gadgets at work. And of course, I had many questions I wanted answers to:

PJ> How are you able to pick out what you want to hear with so many radios talking at once?

EL> You get used to it after a while. It helps when the sounds come from different directions. Each radio has a specific assignment. And with the scanners, I keep the police, fire and ambulance frequencies grouped in different banks. When a major event occurs, I can quickly confine my listening to the frequencies involved by pressing a few buttons and adjusting a few volume controls.

PJ> Does mounting the scanner antennae inside the vehicle adversely affect reception?

EL> Not necessarily. For signals broadcast at close range, it's usually not a problem. And besides, if an event is that far away, you may not have enough time to get to it.

PJ> How do you know which events are worth going to?

EL> It's based on either how close it is, the severity of the incident or how many emergency vehicles are involved. For example, most one-alarm fires are out by the time you arrive and aren't worth going to.

PJ> Do you really need all this equipment to find the action?

EL> No, not really. It all depends on what you're trying to do. If you just want to find a local fire or emergency incident, a simple handheld scanner will do.

PJ> What other general information is important for those considering "mobile scanning"?

EL> It is very important to be considerate of the local and state laws in your area. Interfering with an official performing his or her duty can be illegal and cause for fines and or arrest. Depending on the incident, it may be advisable to stay away completely and just listen. Personal safety and compliance with the law should always come first. When you are able to spot an emergency event, safe distance is extremely important.

Saturday morning quickly evaporated as we caught up on some much needed sleep. The afternoon was spent pouring over the radios and other gadgets in Ed's home. Here again, Ed had many radios to look at and listen too. I also had a chance to look at the various lists he had compiled for frequencies in his area. Having shared his frequency lists with others provided him

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who share his interests and add their knowledge of frequencies.

Saturday evening at 8:00 pm, we again joined up with Gene, at a local diner for dinner. Sharing their past experience was almost as good as being there. Afterwards, we went to an area familiar to both of them and parked on an abandoned gas station lot which just happened to be close to the local fire department. Again, not much was happening.

Ed had warned me before coming to Houston we may wind up sitting on some corner just listening to the radios without seeing much. We did, however, manage to follow up on a couple of ambulance calls; one of which was a stabbing. But by the time we arrived, the victim was being patched up and was on his way to the hospital. On occasion, we would get separated from Gene but would keep in touch with the two-way radios and report on what each other was seeing or hearing.

By 1:00 am, we were getting tired. We said good-bye to Gene and headed home. On the way, Ed had been listening to a report of an auto accident and drove by to see a truck sitting upside down on the highway. Fortunately, no one was hurt and the police and tow trucks were in the process of moving the vehicle off the road. Again, Ed and I were very careful to keep a safe distance from the officials at work.

Just after leaving the accident scene, Ed decided to go by a major fire taking place in another area of town which he had been monitoring for the past hour or so. Ed said it sounded like it was still a large fire. Looking off in the distance, Ed pointed to a large pillar of smoke. Sure enough, it was still burning.

As the radios continued to chatter, Ed made a few adjustments to one of the radios so we could focus in on the event. We heard calls for more fire trucks and took note of the address. "Sounds like a three alarm fire or better. We don't get many of these and it still should be burning by the time we get there. It's getting late though. Want to go see it?". "Sure!" I said. "Never seen a big fire in person."

Within fifteen minutes or so, we arrived on the scene. A large grocery store called "Sellers", located in Jacinto County on the east side of downtown Houston, was wholly ablaze. Ed made sure to stay clear of the officials in charge and took a position a short but safe distance from the fire. It was a big fire all right, probably six alarm or better and a rare event by Ed's account. I counted at least ten different emergency vehicles and there were probably more. Firemen were climbing up the tall fire truck ladders to douse the flames from the roof. Others were busy breaking out the glass on the front of the building. The sound of machinery, breaking glass, and the crackle of fire filled the air. The billowing smoke contained what looked like thousands of fire flies.

Ed picked up his cellular phone to call a friend, a free lance videographer, on the chance he was in the vicinity. If the news media hadn't arrived, Ed would grab his camcorder and tape the event taking the tape to the news stations the next day. As it turned out, his friend was already there and invited Ed to

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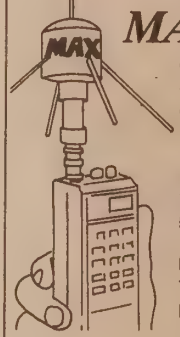

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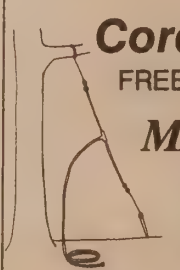

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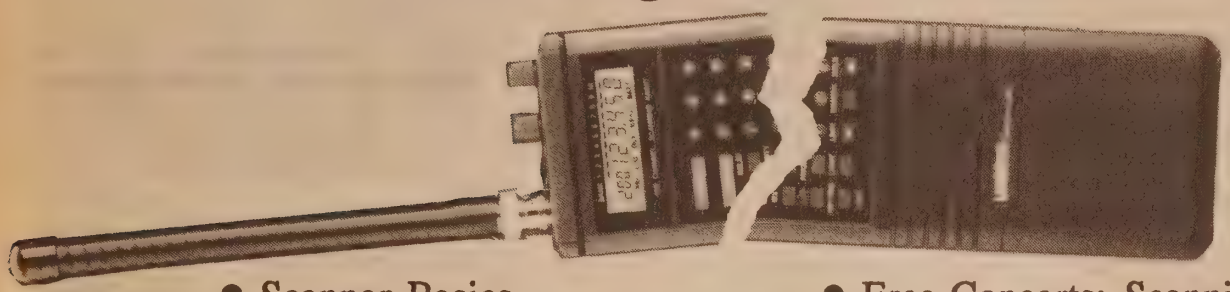

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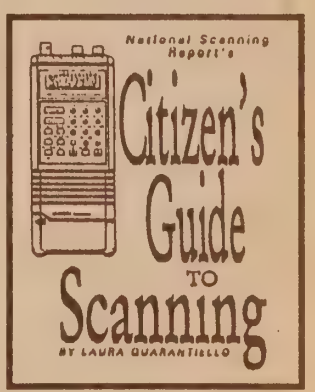

Please send me the *Citizen's Guide to Scanning* for just $19.95 plus $3.50 UPS or $2.50 book rate shipping. I have enclosed a check, money order or Visa/Mastercard no. and expirydate. (PA res. add 6% sales tax. Canadian res., please order by bank card only.)

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his location about a block away. As we arrived, we saw him and another newsman getting out their video equipment to record the event.

By now the fire had grown to the point where the steel beams of the building were buckling under the intense heat which caused the entire front of the building to sag. It was an eery sight to say the least. At one point, you could hear the fire command call for men to get away from the front of the building. Within seconds, you could see men running from the front, and just in time as the smoke whooshed out the doors and windows.

One of the firemen was carried away on a stretcher to a nearby ambulance, apparently suffering from exhaustion. He was transported by the local EMS to a nearby hospital to be checked out just in case is was something more serious. The last thing you want to witness is one of these firemen getting hurt. You can't help but be impressed by how they put their lives on the line.

After an hour or so, we had seen enough. It was 3:00 am and we were both exhausted but very satisfied with having encountered such an event.

We spent the next day talking about other events Ed had seen and also had a chance to look at some of his video tape collection of past fires, including some of the largest refinery fires ever witnessed in Houston.

As the plane took off from Houston bound for St. Louis, I couldn't wait to get home and try out some of the techniques I had learned. Thanks for the experience, Ed. I certainly will never forget my trip to Houston!

Perry Joseph is President of DataFile, Inc., and develops custom software.

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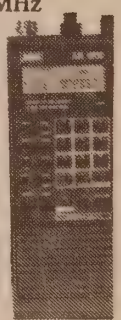

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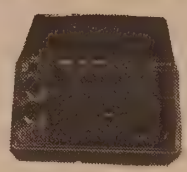

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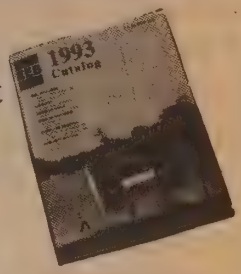

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May "The Force" Be With You

From my room in the Omni Hotel Contada Beach in San Juan, I could easily see the vast stretches of ribbon-like beaches. Clear blue water crashed upon the shore, populated by hundreds of brown-skinned bodies. It looked like something out of a travel brochure. My daydreaming was interupted by the telephone. It was the front desk clerk and I could tell from his voice that something was wrong. "There are some police officers here to see you, Mr. Schrein,"he said uneasily. "They want you to come down."

I was in Puerto Rico to write an article on the San Juan Police department but when I arrived at the hotel lobby to meet my interviewees, I did not find just one or two officers, but five fully-armed officers in full tactical gear. They looked like they were ready to storm the building. "No wonder the front desk clerk was uneasy," I thought. I chuckled to myself as I wondered what he must have thought as the group escorted me from the building.

This was no ordinary police dpeartment. This was the Saturation Force, a para-military team that lies somewhere between that of a road patrol crew and a SWAT team. "It seems that when there's trouble, they call us more than the SWAT team," says officer Angel Ortiz with a grin. It's not surprising. Members of this impressive team are called into action a staggering 12 to 14 times a day. Their job is not unlike entering a war zone. When they enter high-risk neighborhoods looking for illegal drugs, they often find residents who are well armed and not afraid to unleash their firepower on the police.

The raid that I had the priviledge to observe took place in a neighborhood known as La

By Norm Schrein

Members of the "Saturation Force" prepare for an operation (left) in the high risk village of La Perla in February 1993 (below).

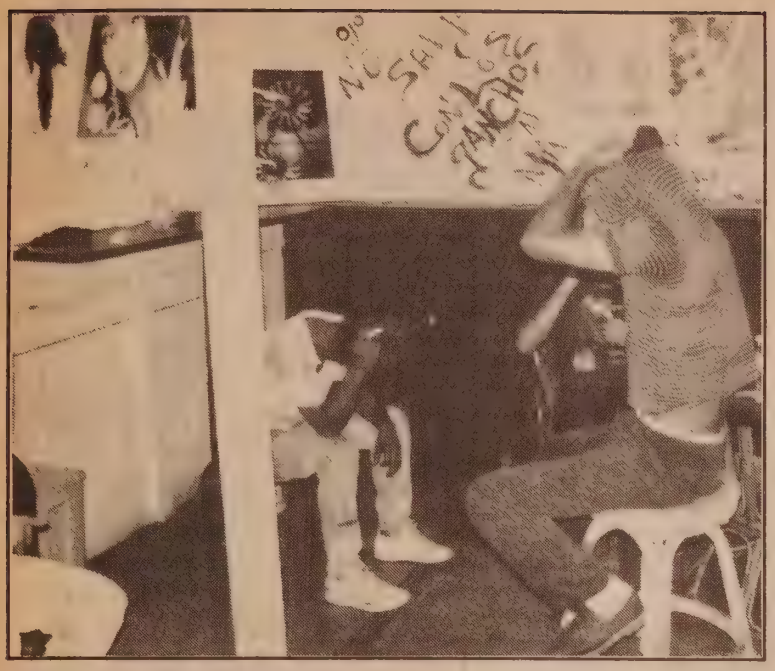
Perla. The place is overrun with gang members, each of whom stalk the city armed with M-16 and AK 47 rifles, Uzi and M-60 machine guns, even hand grenades and grenade launchers.

Sergeant Hector Figueroa, a ten year veteran of the department, has his squad of 14 members meet on a remote stretch of beach near the target. Here they review the plan of attack, prepare themselves and their weapons and don protective gear like flack jackets and ski masks.

Ortiz says that the ski masks are necessary to protect the officer's identity to avoid reprisals from gang members.

In a matter of minutes we are all piled into two vehicles headed toward the target. As we get closer and closer to that "target," my mind starts to go into a heavy sweat. As I look around me, the officers in my vehicle have flack jackets, 9 mm automatic weapons with extra large clips. Other officers clutch their M-16 rifles. I'm wearing a light jacket, armed with a cheap camera. "Schrein," I think to myself, "what have you gotten yourself into this time?" I feel as though I'm an unwitting player in some Third-World coup.

As we approach our destination, officer Ortiz tells me that we will have to move quickly when we arrive. He and I will take the high ground with one of the riflemen while other officers rush the "target". In a matter of seconds we are out of the vehicles. Ortiz and the rifleman are 25 or more yards ahead of me heading for the



Shooting gallery raided in La Perla.

high ground. A couple of young women see them coming up the hill and begin screaming, running across the street for safety. The remaining officers head down into LaPerla.

Soon there are people running everywhere. Officers are zeroing in on specific suspects and shaking them down. Other officers are entering buildings and searching the outside of others. One officer overturns a couch sitting near one building. Others enter a bar and many patrons decide that it is time to leave. Above the bar is a "shooting galary" for addicts. Officers check it out and leave. Other officers are working the buildings down a side street. Overhead a police helicopter flies by at rooftop level.

In about 15 minutes the raid is over. Most of the "bad guys" had run off this time. Officers do come up with a box of various illegal drugs consisting of heroin, cocaine and crack. The street value of the narcotics is placed in excess of $200.

Now the officers must get out of the neighborhood safely. Just as in a military operation, the riflemen provide cover as the officers back out of La Perla.

The "Saturation Force" runs their raids much like a military operation, and considering what weapons they encounter, it is understandable. The force has a large arsenal of their own. Officers use M-16, M-14 and M-1 rifles, also they have their 9 mm service weapons, shotguns, machine guns and a gas gun. This time the officers had a good raid, but sometimes they are not always as lucky. On January 24, 1993, police headquarters received a telephone call requesting

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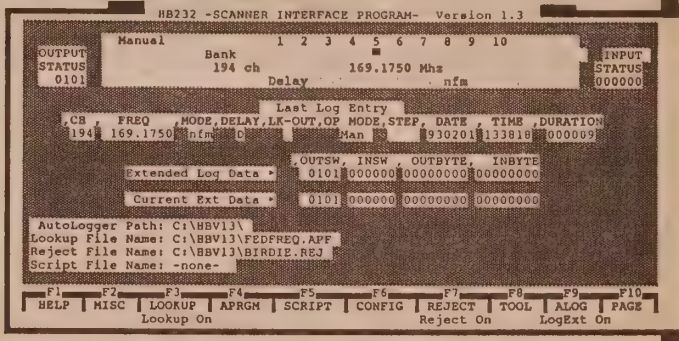

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Confiscated narcotics from the raid.

the "Saturation Force" in Vista Hermosa as there was some large problem at an undisclosed location. This call was, in fact, a setup.

When officers arrived, gang members were waiting for them in ambush. Gang members opened fire. One round hit the windshield of a police van, shattering the windshield and injuring the van's driver, Officer Jinette Ryes. Officers returned fire and managed to arrest 14 people, 9 of whom were under the age of 16. Additionally, 19 weapons were confiscated. The fourteen were charged with a variety of crimes including possesion of drugs, and possesion of illegal weapons. A couple of the gang members were also wanted on outstanding murder warrents.

The "Saturation Force" is a part of the Police Department of Puerto Rico and they will respond anywhere on the island that they are needed. However, the majority of their time is spent in the city of San Juan. It is a team that believes that their strength lies in numbers, patrolling neighborhoods that no single patrol team would even attempt to enter.

The officers are well trained to perform their duties but that alone does not guarantee their safety. Ortiz says, "Each officer knows exactly what his job is and performs it almost instinctively when he exits the vehicle". All officers on the team trust their lives to the other members of their team. There are times, like the situation at Vista Hermosa, where all their training is stretched to the limit.

The "Saturation" Force" performs a critical job, although the officers feel that it is a never-ending job as well. Soon this well trained team will be even busier. The day I rode with the men and women of the "Saturation Force" other members of the Police Department of Puerto Rico were training with National Guard Personnel in an attempt to step up the pressure on drug dealers and those with illegal weapons.

It will be only a matter of time before the members of the "Saturation Force" will find they are conducting many more raids. Each time they enter a neighborhood like Vista Hermosa or La Perla, they have real concerns about coming out alive.

When I ended my tour with "Force" members, there wasn't much time for good-byes. Just as our van pulled into the parking lot of the hotel, the radio crackled with news of a bank robbery in progress. "I guess we're going to check that out", Ortiz told me. I jumped out and watched my new friends speed off for another dangerous assignment.

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By Robert Coburn, (NH 1 AAA)

Private Business, Public Airwaves

Above: Brian Smith of Miller Pipeline Co. uses his handheld business radio.

Business radio is an often overlooked area of monitoring that virtually all scanners can receive. Tuning in the right frequencies can give you an "insider's" look at a particular type of business. After all, just about every business uses radio today – construction, security, electrical, realty, environmental, even funeral parlors and septic system firms. Tune in and you may well learn that your neighbor's house is infested with termites. Or that it's up for sale – or both! In fact, listen long enough and you'll regularly hear careless delivery people call in customer names, addresses, and credit card numbers for approval. It's a rich bag full of personal, often very private information. But few frequency directories give specific information on the business frequencies in use in your community. Worse, there are reasons why this information may appear incomplete or inacurate in a frequency directory.

After reviewing scanner directories, FCC license data bases and other frequency lists, scanners listeners may conclude that a certain business is not using radio since they cannot find a frequency for it. That may be jumping to conclusions, though, since some frequency listings can be difficult to uncover. Here's a few circumstances that make the job tough.

In some cases the license has expired. The licensee has not renewed the license yet continues to operate. Old copies of frequency directories may provide the information then. Remember too, that the official records may show a business listed as "Joe's Pizza Shop" or list it in the owner's name, "Joe Jones."

Secondly, the business may be operating on a Private Carrier (FB6) license system. In this

case, the private carrier holds the license and all users operate under his license and are not required to obtain a license in their own business name. This is in contrast to the Community Repeater users (FB4) who must obtain their own license to operate on the multi-user repeater.

Other businesses operate on the 800 MHz Specialized Mobile Radio Service (SMRS) as users of a particular system, usually trunked. In the past they were required to obtain their own license, but the FCC has delicensed the service for users and they operate under the SMRS owners license. Consequently they will not appear on the FCC data base as licenses.

Finally, many businesses purchase their radios through catalogs and distributors and fail to complete and file the necessary license applications with the FCC. Monitoring these frequencies you may find your missing pizza shop and a lot more.

The following frequencies should be searched for activity:

ITINERANT FREQUENCIES

These frequencies are licensed to permit the operation of radio stations at unspecified locations for varying periods of time.

27.49, 35.04, 43.04, 151.505, 151.625* (red dot), 158.400, 451.800,
456.800, 464.500 (brown dot), 464.550 (yellow dot), 469.500, 469.550.
*Radio Shack handheld business portable

LOW POWER 2 WATT BUSINESS FREQUENCIES

These frequencies are licensed for a maximum power of 2 watts and each station is licensed as a mobile station. These stations may provide the operational functions of a base

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Super Converter 9001 (for base station use) has a 12" BNC to Motorola plug adaptor. Operates from a 9V battery (not included) or a 9VDC power supply. Comes with complete instructions and a 120-day limited warranty.

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The Super Converter 9001 sells for $99.95 and is shipped fully insured by UPS. The Super Converter II sells for $94.95 and ships by UPS.

Buy now before they can't be had. Federal law will soon prohibit the sale of this equipment. (For this reason, returns will not be accepted.) So order early. Send your check, money order or VISA/Mastercard to:

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"The Scantenna -- Five Stars"

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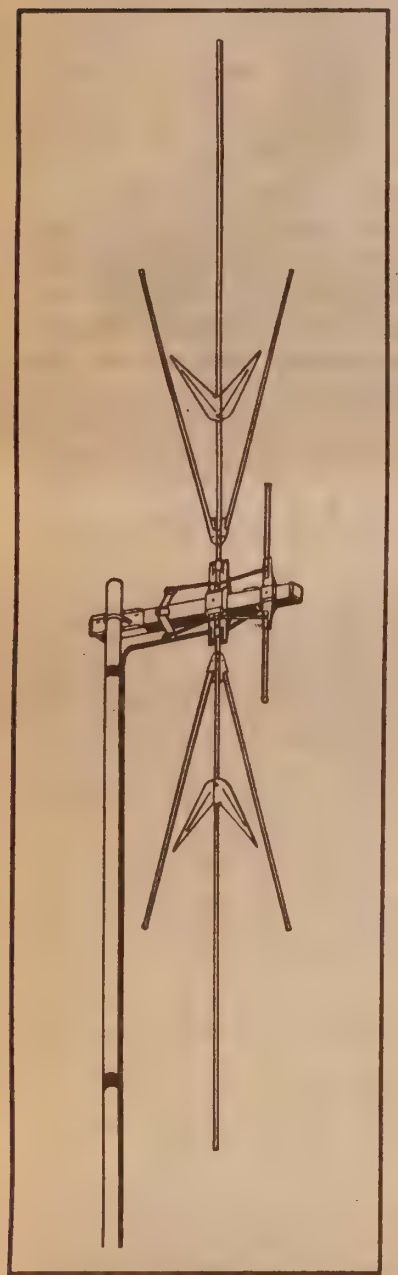

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--Travis Lantz, Iowa City, Iowa

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or fixed station provided that the antenna is within 25 feet of the control point.

27.51, 27.53, 30.84, 33,12, 33.14, 35.02, 42.95, 154.570 (blue dot), 154.600 (green dot), 457.525, 467.850 (silver star), 467.875 (gold star), 467.900 (red star), 467.925 (blue star)

GENERAL MOBILE RADIO SERVICE

These frequencies are currently licensed to individuals for non-business use and are generally available in the consumer market.

Used for base-mobile-portable repeater
462.5500, 462.5750 (white dot), 462.6250 (back dot), 462.6125, 462.6375 (Radio Shack Ch-2), 462.6625, 462.6875, 462.7125 (Radio Shack Ch-1)

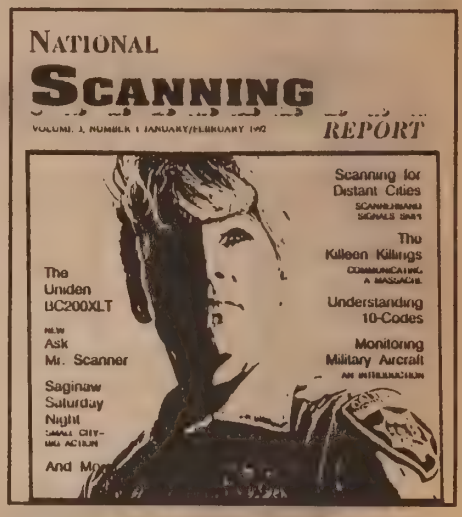
Used for low power portable-mobile
462.5625, 462.5875, 462.6125 462.6375 (Radio Shack Ch-2), 462.6625,462.6875, 462.7125 (Radio Shack Ch-2)

Stations operating in the 150 to 175 MHz range could have an antenna about 18 inches long. If it's in the 450 to 470 MHz range, the antenna would probably measure about 5 inches. And everyone's familiar with those tiny corkscrew antennas that are used for cellular car phones in the 800 MHz range.

If this does not provide the frequency, another approach is to use a handheld frequency counter and read the frequency while the base station is transmitting.

With this information, you are now ready to do some digging to find that apparently non-existant frequency used in business.

National Scanning Report



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For a law enforcement officer, there is no such thing as a routine stop. Every stop, every call has the potential of turning dangerous, deadly, hilarious or bizarre, all at the whim of human nature. These stories are factual.

SLOW AND GO

Detective Rich Miller of the San Diego County Sheriff's Department has learned to appreciate the possible merits of being stuck in a traffic jam. Miller had dropped off Harris County, Texas Detective Howard Kimble and inmate Jose Pastor at San Diego's Lindbergh Field and had become entangled in the famous airport traffic. Inside the terminal, Detective Kimble checked in with the Continental Airlines ticket agent and was told that policy required inmates to travel unrestrained. Immediately upon removing the handcuffs, prisoner Pastor bolted and ran. Detective Miller, outside at a standstill in a parking lot traffic jam saw Pastor running in and out of traffic lanes, so he abandoned his car and went after the prisoner on foot. Pastor was recaptured at gunpoint and returned to Texas without further incident. Some days crime just doesn't pay.

Armed and Dangerous

Officer Pat Wall of the Grapevine, Texas Police Department says that "sometimes police officers get to thinking they've seen it all and then 'all' jumps up to prove them wrong." Wall received a radio call of a juvenile carrying a rifle. The dispatcher couldn't be more specific about the type of rifle, but relayed that the mother had been chased from the house by the boy.

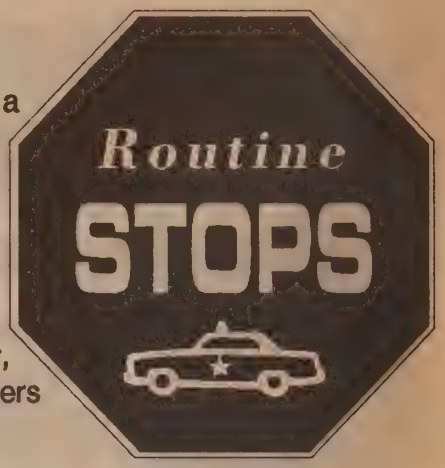
Officer Wall responded to the call and was told by an adamant mother that there were no realistic looking toy guns, no air rifles and no BB type guns in the house. The only weapons, according to the parent, were hunting guns that were kept in a closet. "She was pretty sure that the boy didn't know where the ammo was." Pretty sure isn't good enough. Officer Wall was first on the scene, and saw the ten year old carrying "what looked like a small bore rifle at port arms. He was also wearing an old Marine Corps helmet. Looked like an itty bitty John Wayne in the Sands of Iwo Jima, and I figured something bad must have happened to send this kid off."

After a few hours of talking and negotiating, the boy was convinced to come out unarmed. Upon surrendering, it was discovered that the hunting rifle and a small handgun about the size of a .25 turned out to be a very old BB gun and a toy metal handgun. The catalyst that set the youth off? His mother made him wear a sweatshirt to school that he didn't want to wear that day.

The Nose Knows

A law enforcement officer is never off-duty, as a Southern California narcotics unit officer learned. The officer was bicycling in the Ramona, California area when he smelled something very peculiar emanating from a secluded country home. He brought his suspicions to the San Diego Narcotics Task Force, who obtained a search warrant and returned to the home later that afternoon. Inside the home, NTF officers found two pounds of methamphetamine, one pound of marijuana, $39,000 in cash and an assortment of weapons. The meth is estimated to have a street value of fifty thousand dollars. Lt. Pat Kerins reported that the country house was rigged with electronic surveillance equipment, "consistent with major drug traffickers." The couple at the home was arrested on felony charges and booked into the Metropolitan Correctional Center. All because of one good cop with a nose for crime.

Domestic Disturbance



One of the most serious and threatening calls for a police officer is a domestic disturbance. The potential for violence is high and officer safety is often tenuous. Officer Leonard Garcia, 31 and his partner Officer David Haynes, 30, of the Richmond, California Police Department responded to a woman's 911 call for help recently Upon arrival, the two officers entered the apartment and were shot and killed by 52-year-old Jay Choe. Choe then shot his wife and 14-year-old son, before turning the gun on himself. Records show that Mrs. Choe had told a judge that her husband "always had a violent temper, but since coming to this country it has become worse and worse." The officers knew none of this when they answered the call.

AMERICA'S LEAST LIKELY

Officers in Los Angeles, California received a phone tip from a viewer of the television show "America's Most Wanted" advising them of the whereabouts of a murder suspect known only as Sophia, who had been featured on an episode of the TV crime show. Los Angeles PD officers responded to an address in North Hollywood, kicked in the door when entrance was refused and handcuffed thewoman inside. 26-year-old Birtukan Alemu was held for two hours before officers determined that she was not the correct suspect. She was the "spit and image" of Sophia, said LAPD Detective Andrew Monsue, who apologized to Alemu and told her that the Police Department would arrange for repair of the damages to the apartment. Sophia David, wanted for the 1991 fatal shooting of her estranged boyfriend, remains at large.

CONDOR

Replacement Rubber Duckie for Poor Quality Stock Antenna

The part of a scanner that is probably the most important – the antenna – is consistently one of the weakest. The telescopic whip that comes with most scanners is considered the worst. And the "rubber duckie" on handhelds isn't much better.

Now there 's a replacement rubber duckie that is an enormous improvement in signal reception. All you do is unplug the old antenna and plug in the Condor. For base model scanners where an outdoor antenna is impossible an optional right angle BNC connector is available.

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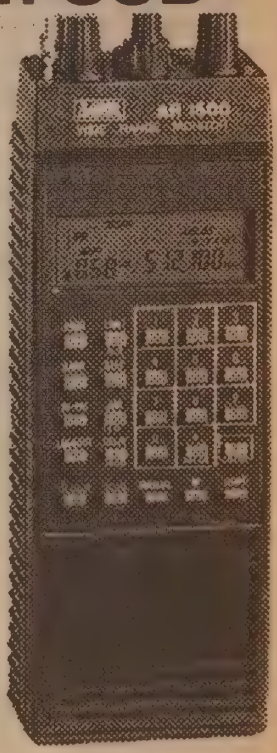

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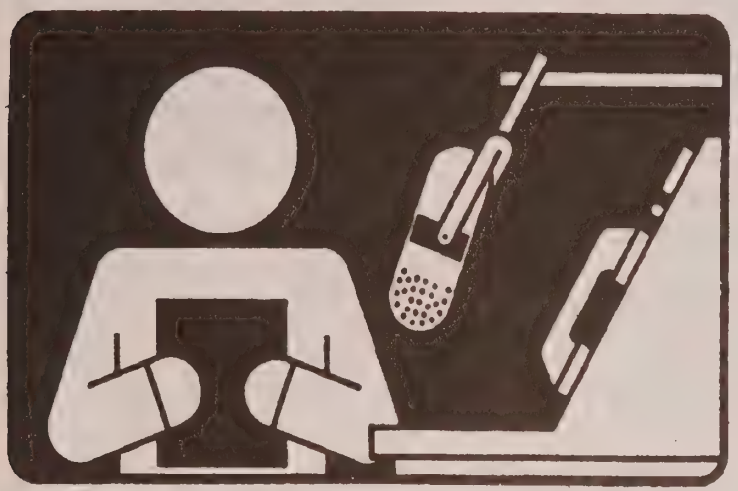

DISPATCH!

Frequency Exchange

By Larry Miller

Cool Columbiana

There's a great little town about twenty miles south of downtown Youngstown, Ohio called Columbiana. Jim Fleeson (OH-8-AJP) says its a safe community, with serious crime almost nonexistent and this is due in large part to the good work of Chief Mark Shaffer and the men and women of the Columbiana Police Department. Jim told NatScan that he wrote a letter to the department requesting information on their public safety system and "believe it or not, the Chief of Police responded personally to my request." Jim was granted an interview with the Chief and gained some detailed information on Columbiana's public safety services.

A 40 watt Midland repeater system uses four antennas on a one hundred foot tower to dispatch police, fire and ambulance services in the town. Each police car uses a 1/4 wave mobile antenna attached to a Midland vehicle-mounted radio.Officers are equipped with Midland, Motorola or Maxon handheld radios. Columbiana presently serves 5,000 residents with seven police units, three ambulances and four fire trucks. The K-9 Unit is composed of a Rottweiler handled by the Chief. During the interview, Chief Shaffer expressed concern with the town's emergency alerting system, including the poor audio level of the sirens and messages that follow. When the budget allows, Jim said the department will erect new alerting towers at the north and south ends of town to relieve the problem.

Chief Shaffer also related how happy he was with the new antenna tower, which has rectified a problem the department had with lost communications as a result of lightning strikes and leaning towers. Safety in Columbiana is at the top of the list. We thank Jim Fleeson and Chief Mark Shaffer for this great look at Columbiana's public safety system.

154.890	Columbiana Police/ ambulance repeater input
151.265	Columbiana Police /Ambulance repeater output
155.475	Columbiana Police Ch. 9
155.280	Columbiana Police Ch.12
158.805	Columbiana Fire and Public Works
155.400	Columbiana EMS Tactical
155.340	HEAR network
154.415	Columbiana Fire Mutual Aid

200 Units = Police Officers
300 Units = Auxiliary Police Officers
400 Units = EMT's and Ambulance Personnel
500 Units = Explorers
114 = Ambulance
116 = Ambulance
118 = Explorer Ambulance

Columbiana squad car at police headquarters.

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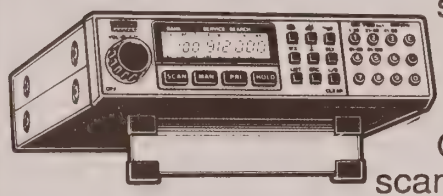
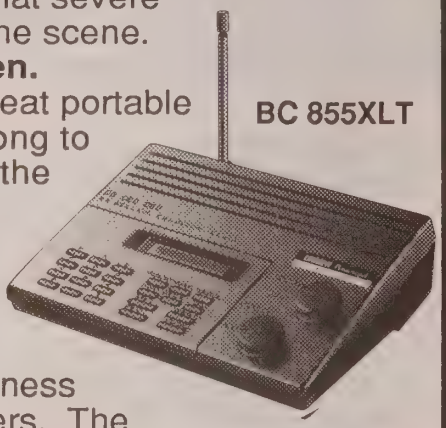


BC 760XLT

Check out our **Bearcat 200 XLT**. A great portable scanner that goes everywhere. Take it along to the races, on that camping trip or even to the lake. This full featured scanner has 200 easy to program channels with 10 scanning banks and 12 band coverage! Nothing escapes the **Bearcat 200 XLT.** All public service and emergency bands are featured along the 118 mhz to 136 mhz aircraft band and the new 800 mhz police and business band! Or choose from a full line of desktop scanners. The **Bearcat 855 XLT,** is a powerful home performer and has excellent sensitivity for really bringing in those weak signals. The **Bearcat 855** has all your favorite bands including 800 mhz. We also have the excellent **Bearcat 760 XLT** featuring one button Service Search. Say you don't know the active police frequencies in your area? Just push the button with the police icon and soon your **Bearcat 760 XLT** is searching the police bands automatically, looking for the action! The **Bearcat 760XLT** also comes complete with 800 mhz band coverage.



BC 855XLT

BC 200XLT

Want a full featured scanner that won't dent your budget? The Bearcat **147 XLT** is for you. 10 band coverage and 16 channels of scanning excitement at a low price that any monitoring enthusiast won't be able to pass up. Or try the **147 XLT's** little brother, the Bearcat **142 XL** featuring the same ten band coverage and up to 10 channels for programming the local action frequencies, including instant weather.

The first word in scanners sales is **R & L Electronics.** The friendly professional people at **R & L Electronics** carry a full line of **Uniden Bearcat** scanners and accessories. They also carry the famous "Betty Bearcat" Frequency guide and the National Police Directory in stock.

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Call them at 1-800-221-7735 . Whether it is your first scanner or your tenth, the first word in scanning is Uniden and the first word in scanner sales is R & L Electronics.

First Word

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POLICE CALL is the most up-to-date frequency directory you can buy. Got a scanner? Get...

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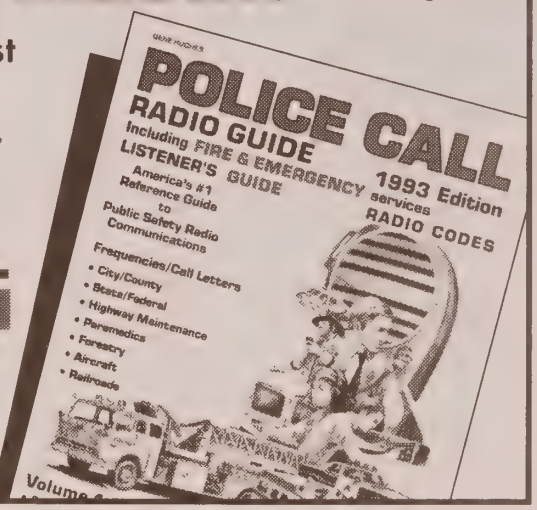
•At all Radio Shack Stores



How Many Cities?

Jeffrey Seale out in the Twin Cities area does a lot of scanning and he dropped around these frequencies that we couldn't resist passing on to you. Keep them in mind, they'll put you in touch when you're in the Minneapolis/St. Paul area.

460.025 MPD Ch. 1 Precincts 3 and 5
460.100 MPD Ch. 2 Precincts 2 and 4
460.175 MPD Ch. 3 Precinct 1
460.250 MPD Ch. 4 Unit-to-unit
460.350 PD Ch. 5 Special Detail/ Detectives
460.500 MPD Ch. 6 MDT Data
460.425 MPD Ch. 7 Info/State Patrol Co-op
460.275 MPD Ch. 8 Metro-wide Emerg.
154.340 MFD Ch. 1 Dispatch/Tactical
154.235 MFD Ch. 2 Administrative
460.050 St. Paul PD Ch. 1 Dispatch - NW & SW
460.150 St. Paul PD Ch. 2 Dispatch - East & Central
460.450 St. Paul PD Ch. 3 Unit-to-Unit
460.225 St. Paul PD Ch. 4 Special Events
460.375 St. Paul PD Ch. 5 Tactical
460.275 St. Paul PD Ch. 6 Metro-wide Emergency
460.575 St. Paul FD Ch. 1 Dispatch
460.625 St. Paul FD Ch. 2 Tactical
460.600 St. Paul FD Ch. 3 Paramedics

Radio Chuckles

While listening to a scanner, Judge Charlie McLaughlin of Pittsburgh, Pennsylvania heard the following conversation:

A call was made from the narcotics task force to locate a K-9. The narcs had a search warrant that they had served and had come up empty. They knew the place was dirty. They had hoped that the dog would find the cocaine. A K-9 officer replied he was available to take the call. The dispatcher asked, "410 King, does your dog sniff drugs?"

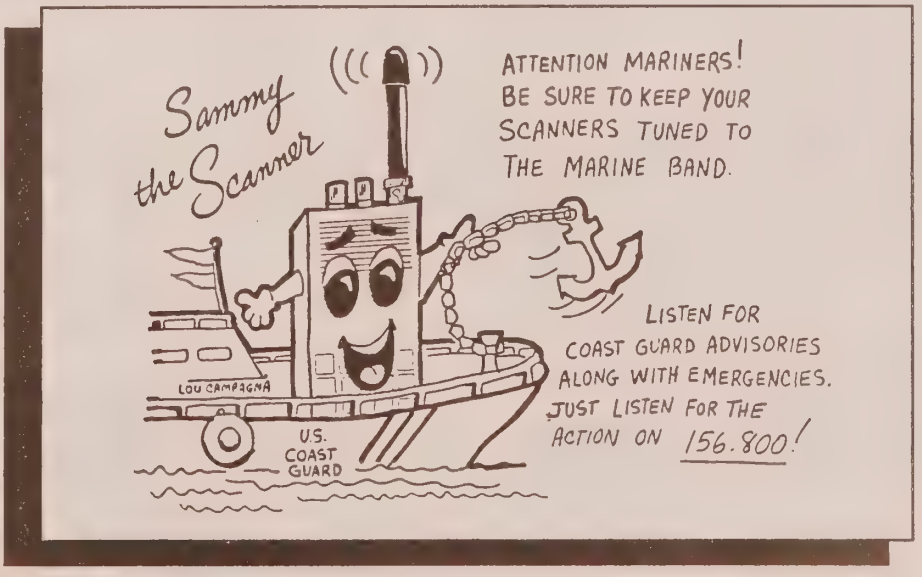
The K-9 cop replied, "No, he does a little beer and pizza after work, but that's it."

Mile High

Deputy John Lewandowski with the Boulder County Sheriff's Office is a lucky man. John says Motorola is supplying his department with radios to enable them to scan the new Denver Police trunked 800 MHz system while on duty. The rest of us who scan this system will be met with anti-scan measures; those annoying buzzes, squeeks and tones that frustrate. Many 800 MHz public safety systems are using these measures to foil listeners. There are some ways around them, but the most cost-effective way is simply to stay close to your scanner and become almost a participant in communications by closely tracking the action. Our cop on the beat gets a tip of the scanner from the NatScan staff for his good work protecting and serving.

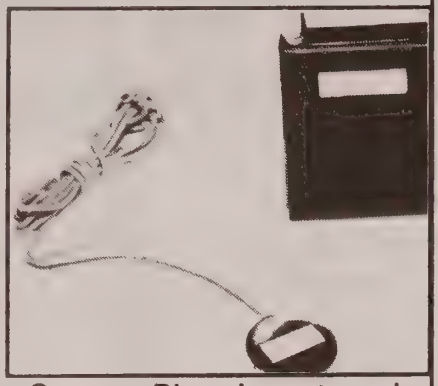
Denver PD

Channel #	Repeater	Input
1	854.9875	809.9875
2	855.4875	810.4875
3	855.9875	810.9875
4	856.4875	810.4875
5	857.2375	812.2375
6	857.7375	812.7375
7	858.4875	813.4875
8	859.2375	814.2375
9	859.7375	814.7375
10	860.4875	815.4875
11	855.2375	810.2375
12	855.7375	810.7375
13	856.2375	811.2375
14	856.7375	811.7375


Sammy the Scanner
ATTENTION MARINERS! BE SURE TO KEEP YOUR SCANNERS TUNED TO THE MARINE BAND.
LISTEN FOR COAST GUARD ADVISORIES ALONG WITH EMERGENCIES. JUST LISTEN FOR THE ACTION ON 156.800!
LOU CAMPAGNA
U.S. COAST GUARD

New Audio Breakthrough

Micro Ear



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MicroEar Sound Sensor Disc is extremely sensitive. Turns nearly any material into a giant microphone. Magnetically attaches or scotch tapes to doors, walls, windows, desk, file cabinets.

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To monitor from a distance (to 1/4 mile) use the T-2501 transmitter to your scanner or our R-2701 receiver.

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To monitor with headphones, speaker or tape recorder, use our M-1201 amplifier, specially designed for the MicroEar, and will amplify sound thousands of times over.

ST-2201 Invisible See-Thru Sensor..... $44.95
S-2201M MicroEar Disc Sensor..... $19.95
M-1201 Amplifier $69.95
T-2501 Transmitter for scanner $89.95
R-2701 Receiver $75.00

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Shipping charges non-refundable. No personal checks. Send cashier's check or money order made out to ILIADIS

Shipping	$5.00
TOTAL	

WAIVER Purchaser agrees to hold seller harmless for any actions resulting from any use or misuse of any item purchased.

Signature _____ Date _____

Name _____

Address _____

Telephone (____)_____

15	857.4875	812.4875
16	858.2375	813.2375
17	858.7375	813.7375
18	859.4875	814.4875
19	860.2375	815.2375
20	860.7375	815.7375

Scanning Mobile Data Terminals

The question of whether or not police vehicle-mounted MDT's can somehow be scanned continues to come up as departments come on-line with the systems. Deputy Leo Martin of the Contra Costa County Sheriff's Department kindly stepped in to set the record straight:

"As officers and dispatchers become more comfortable with using the MDT's more and more calls will be put out only over the MDT. The only voice would be something along the lines of "Unit ###, copy cold theft report via your MDT" or "Unit ### check your MDT for a detail." But still, all HOT calls will go over the voice channels so that units without an MDT or out of their cars can hear it. Driver's license and registration checks are done via the MDT, as well as several other checks (Records, prior contacts, vehicle contacts, location checks on addressses, prior calls at locations, etc) and also give unit status such as on scene, clear, en-route, etc.

We (Contra Costa SO) have had our system for about 3 years and its only been in the last year or so that cold calls have been put out on the MDT only. As for scanning the signal the data signal is not like ham packet or other ASCII type data. Motorola uses their own computer software language and even that language is modified by the department that uses it to customize the system to their needs.

I am sure someday an MDT scanner will be built, but at this time there is no way of looking in on MDT data unless you buy an MDT and have the right software installed."

Venturing to Ventura

Vunderful Ventura, California! Okay, okay, I'm overdoing it. Dispatch always tries to fill reader requests and Marge Arnott asks for "anything you can find" on frequencies in the Ventura area. We have many folks out there who are new to the scanning hobby and are having trouble finding local frequencies. *NatScan* can help! Drop us a line and we'll set you straight.

Ventura Police Ch. 1 Dispatch	155.310
Ventura Police Ch. 2 Information	155.625
Ventura Police Ch. 3 Car to car	155.145
Ventura Police Ch. 4 Car to car	154.920

Ventura Police Ch. 5 Car to car 156.015
Ventura City Fire Ch. 1 Dispatch 155.040
Ventura City Fire Ch. 2 Tactical 154.325
Ventura City Fire Ch. 3 Tactical 154.280
Ventura City Ambulance Ch. 1 Dispatch 155.205
Ventura County Sheriffs Ch. 1 Dispatch 159.210
Ventura County Sheriffs Ch. 2 Car to car 158.730
Ventura County Sheriffs Ch. 3 Car to car 156.015
Ventura County Sheriffs Ch. 5 East Valley 156.150
Oxnard Police Ch. 1 Dispatch 155.655
Oxnard Police Ch. 2 Information 155.745
Oxnard Fire Ch. 1 Dispatch 154.145
Oxnard City Ambulance Ch. 1 Dispatch 155.235
Ventura College 155.145
Ventura High School Security 154.600
Buena High School Security 154.570
Balboa Middle School Security 154.600
Buena Ventura Mall Security 461.612
Oaks Mall Security 461.375, Esplanade Security 461.375, Dial Security 464.800, Center Point Mall 464.475

"...the best place to look is in Police Call."

More people buy POLICE CALL than all other VHF/UHF directories combined. Have you bought yours yet?

POLICE CALL
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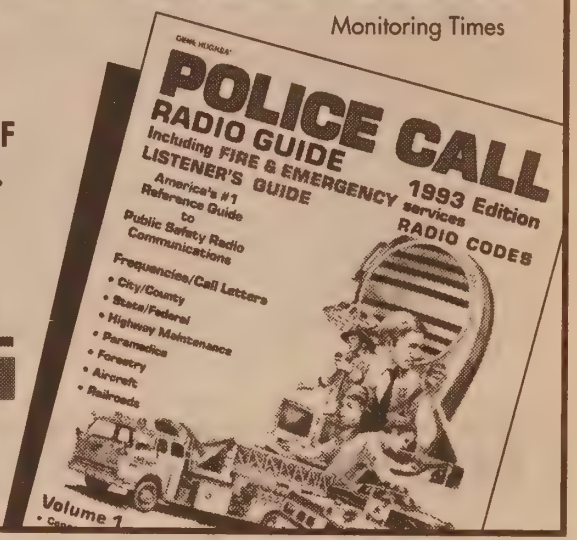
•At your scanner dealer
•At all Radio Shack Stores



All Ears

Lynn Sully heard a good one the other day while searching the 49 MHz band for military range activity. A baby monitor frequency was active with the voices of two young boys who were trying to find a place to plant the receiver of the monitor to listen in on their parent's conversations. After much banging around, they thought they had the perfect bugging location: under the kitchen table. About that time a male voice was heard to say, "What are you boys doing? You're grounded!" Now that's what I call pest control.

Motor City Blues

Can you hear that sax playing? We must be in Detroit because someone's playing the blues. I've heard stories about the Motor City; they say you don't know anything about it until you've tuned in Detroit Police and Fire. If you've ever caught the adventures of this department on the TV series COPS, then you know the action on the streets is hot. Go ahead and give these numbers a try, I dare you!

F-1 453.350 DPD Downtown
F-2 453.750 DPD
F-3 453.300 DPD
F-4 453.800 DPD
F-5 453.550 DPD
F-6 453.250 DPD
F-7 453.700 DPD
F-8 453.328 DPD Detectives
F-9 453.375 DPD Data
F-10 453.425 DPD Data
F-11 453.875 DPD Tactical/K-9
F-12 453.925 DPD Command

F-1 154.130 DFD Dis
F-3 154.400 DFD Tactical
MA 154.265 County Mutual Aid
F-1 155.160 EMS Dispatch
F-2 155.340 EMS-HERN
F-3 155.325 EMS

Bite Into the Orange

John Miller, part of our Southern California Monitoring Network, knows Orange County, CA law enforcement like the back of his hand and he has passed his list along for the rest of us to bone up on. OC makes extensive use of the 460 MHz band, as shown in the list. Many departmentsshare frequencies, so your location will determine what you hear. If you hear too much, don't blame us, blame John!

Countywide Emergency	RED	460.025
North County Tactical	ORANGE NORTH	460.200
South County Tactical	ORANGE SOUTH	460.400
Countywide Tactical	BLUE	460.500
Countywide Information	PURPLE	460.300
Countywide Car to Car	WHITE	460.150
	GREY	460.550
	BLACK	460.525
Orange County Sheriff	18	460.425
Anaheim	26	460.050

Brea / Yorba Linda	22	460.100
Buena Park	23	460.250
Costa Mesa	44	460.075
Cypress	36	460.475
Fountain Valley	40	460.325
Fullerton	24	460.175
Garden Grove	32	460.275
Huntington Beach	42	460.100
Irvine	39	460.600
La Habra	21	460.475
La Palma	37	460.325

Laguna Beach	45	460.475
Los Alamitos	48	460.325
Newport Beach	43	460.275
Orange	33	460.250
Placentia	25	460.325
San Clemente	46	460.175
Santa Ana	31	460.475
Seal Beach	41	460.175
Tustin	34	460.325
Westminster	47	460.250

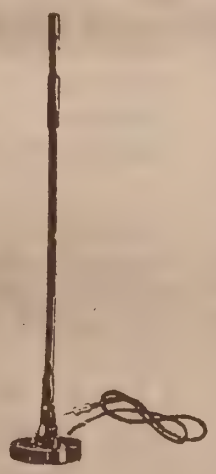
Where's That Ferry?

Duane Vincent, KA7JEX, is puzzled. He says that Washington State Ferries are using 151.040 MHz for Deck to Bridge, and Deck to Dock communications. Hey, says Duane, this is not a marine frequency, but one assigned to Highways. "The obvious question: HIGHWAYS?? for a FERRY? Yup. The ferries are operated by the state Department of Transportation, and they are considered a part of the state highway system." So there! That's solves that mystery. Keep in touch, Duane!

Who's That?

Jim Hawthorne in Rainbow, California told me that he's been listening to Temecula Police Department on 154.1 MHz for some time now. Strange? It is if you realize that 154.1 is a county government frequency and isn't usually used by police. Curious guy that Jim is, he asked a TPD officer what the story was. Officers told Jim that Temecula expects to switch to an 800 MHz system shortly, as soon as the city budget allows.The current frequency, 154.1, is on loan from Riverside county and should be returned to them when the 800 system goes into effect. Currently, Murietta PD is already operating on 800 MHz. Additionally, 154.200 is used by TPD as as tac channel 9. Thanks for the on target info, Jim!

Go Mobile!!



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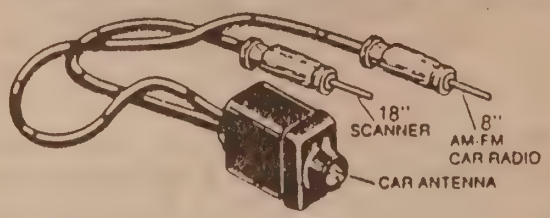
- Broad frequency coverage including low band, FM broadcast, aircraft, high band, military, land mobile and cellular.
- Generous 12 ft. coax cable.
- Easy on/off
- Substitute for stock whip for indoor use or where a large outdoor antenna is impractical.

Just $49.95 plus $4 UPS

Replacement whip for 3/8"x24 TPI threaded mount available for $24.95 plus shipping. Optional BNC connector $3.95

Convert Your Car Antenna into a Scanner Antenna



Scanner Antenna Converter turns your car's AM/FM antenna into a full-range scanner antenna. No gluing, no scraping, no soldering. Just plug it in. The Scanner Converter installs in seconds and does not interfere with regular radio reception.
Optional BNC connector $3.95

Just $15.95 plus $3.50 UPS

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Bits and Pieces

The Temecula and Oceanside offices of the California Highway Patrol have switched frequencies. The new numbers are 42.42 base and 42.84 mobile. (Thanks to Gene Hughes of *Police Call* for the update.)

Boston Police Department frequency 460.075 is reported to be extrememly active with surveillance operations. (Thanks to our East Coast Monitoring Network for the info.)

Updated frequencies for the Massachusetts area are Lowell PD 482.4125, Lowell FD 154.205, Dracut PD 482.8875, and Dracut FD 154.400. Also, 155.340 and 155.280 are used by Basic Life Support (BLS) ambulances reporting to hospitals. (Thanks to John Frye.)

Sterling Ambulance Company in San Diego, Califlornia can be found dispatching on 858.650.

Lake County, Illinois' Commonwealth Edison Company has switched to a 900 MHz trunked system. Some other areas are still using the VHF system between 153.445-153.710 MHz.

Clip It Out

Send us your newspaper clippings concerning scanning and we'll thank you for it!

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A Most Dangerous Profession

POLICE
FIRE
EMS

Explosives today are an everyday fact of life. They are used in both construction and demolition, military and police activities, by criminals and terrorists, and even by the everyday person in the form of fireworks and ammunition for rifles, pistols and shotguns. When explosives are improperly stored or find their way into the hands of the disgruntled employee, the terrorist or the mentally unbalanced, it is the job of the bomb squad to render them harmless. In many places these duties are the responsibility of the fire department.

Hushed Tones on the Radio

A bomb squad is most commonly called out when an exlosive device is reported in a public building such as an office or school. When the bomb threat is received, the first step is to have the building evacuated. All occupants are instructed to take their personal belongings such as backpacks, purses, handbags and so on with them. This makes the job of the searchers easier by reducing the number of potential bomb containers that must be inspected. The fire department has of course been dispatched, but never by radio. This is often the only type of fire run that is not dispatched by radio, since hearing the run put out by radio could cause a bomber go over the edge and detonate the device, and would also lead to lots of news media and other unwanted bystanders in the area, thereby increasing the risks. Radio is, however, often used in various other ways when on the scene of a potential explosive device. The command post and fire companies may communicate with each other and with the bomb squad team while they wait for the outcome of a building search. Once the bomb squad goes inside the building they do not use their radios, since explosive devices have been known to detonate in the presence of radio frequency energy. Interestingly, it's not the bomb squad that goes looking for the bomb. Police officers are often the persons who (along with building maintenance personnel) search the building, since use of firefighters would leave no one to operate firefighting equipment in the event of a detonation. Bomb squad personnel are not used to search the building since a detonation could leave no one available to neutralize any other devices that may be located. Once a suspicious package is located, the bomb squad takes over. Using several interesting and technologically nifty methods, they determine the type of device and the best way to neutralize it, and then attempt to do so if it is decided that moving the device is not safe. If the device is in an enclosed area where a detonation could cause severe damage and personal injury, the bomb squad may elect to very carefully remove the device from the area. The device is then placed in a very sturdy container (often a tube made of very thick steel) which is mounted on a trailer. The purpose of the sturdy container is to contain and direct upwards any explosion, while springs reduce the possibility of a detonation by sudden shock. After a device is neutralized and placed in the trailer, the bomb squad then transports the device to a remote area where it is disposed of, usually by blowing it up.

Bomb squad officer works on explosive device.

Everyday Hazards

Another common job for the bomb squad is the pickup and disposal of explosives and ammunition that has been left and forgotten in a basement somewhere. Old ammunition is generally not a problem, and can simply be picked and carted off to be disposed of. Explosives such as dynamite, however, must first be checked to determine if they are safe to be moved. Dynamite especially must be checked, since it has a tendency to become very unstable when improperly stored. If it has been properly stored, dynamite is simply placed in the trailer and hauled off to be disposed of (again, usually by blowing it up). If improperly stored, dynamite must be stabilized by drenching it in diesel fuel. It can then be disposed of. This operation requires the response of a full fire assignment to stand by in the event of a fire or a detonation. Finally, after all the activity is over and the device has been disposed of, the bomb squad calls in service by radio with the dispatcher. This is often the only inkling most scanner listeners ever have that

a bomb run has taken place.

Divert Where?

Transporting to hospitals used to be a very simple matter: stabilize the patient, load him in the ambulance, and take him to the hospital. This was simplified for the ambulance and the emergency room through the use of radio, which allows the ambulance to advise the ER what they are bringing and, and allow the ER to give specific pre-arrival instructions. If the ER was full or could not handle the patient, they could simply advise the ambulance to divert to another facility. A new wrinkle has been added to this process, however. Recent court decisions have stated that by telling an ambulance to divert to another facility, the emergency room is accepting responsibility for that patient until another ER does so by radio or the patient arrives at another emergency room. This could cause some changes in the way EMS personnel and emergency rooms communicate by radio. Keep your ears on those hospital and EMS channels, and if you hear (or hear of) any interesting changes taking place, let us know.

Special Emergency Radio Service

In the last issue (p. 19), we listed the 1ten base/mobile frequency pairs presently used by the Special Emergency Medical Service. Med 9 was listed as 462.950/468.950 and Med 10 was listed as 462.975/468.975 MHz. Med 9 should have read 462.950/467.950 and Med 10 462.975/467.975 MHz.

Those Darn Trunked Systems

A common problem that has been cropping up with trunked radio systems is not in the systems themselves, but in the fact that many agencies change over to 800 MHz trunked systems without considering the impact this has on surrounding departments that need to communicate with them, which can have an adverse effect on mutual aid and automatic response agreements. Many of the neighboring departments cannot afford to purchase 800 MHz trunked radios to communicate with the larger agency. Well, early 1993 led to a change in that respect. Motorola (who manufactures the trunked radios systems many agencies are switching to) has signed licensing agreements with most of the other radio manufacturers such as Kenwood, Standard, and Midland which will allow those companies to manufacture radios compatible with Motorola trunked radio systems. This will lead to more agencies being able to afford radios that will allow them to communicate with neighboring agencies that have changed to trunked systems.

Offier Down!

It was 11:20 pm when reader David Hamilton (CA-6-AGO) decided to turn on his scanner and monitor Compton, California's two police frequencies.

Compton is a densely populated city some half-dozen miles south of Los Angeles. Scanners there chatter constantly as police dole out assistance to a never-ending stream of calls for help. There's a certain rhythm to it, exciting but detached and professional. "Do I have anyone at East Rosecrans?" asked disptach when David first turned on his scanner. Seconds later, the air was shattered by the voice of a female patrol officer: "Officer down! 981 Rosecrans - 981 West Rosecrans, cross of Kemp..." "At that point," David says, "All hell spewed forth."

"Officer Down" are the heart-stopping words that every cop dreads. It's a life-in-the-balance call and every officer on the force will drop the hammer to respond.

David punched in a dozen or so Los Angeles County Sheriff's Department frequencies and turned on his tape recorder. What follows are bits and pieces paraphrased from actual transmissions that night. By now, David has pulled out a local map and is tracking the action as it occurs.

"Officers at the scene! Get those people back...secure that crime scene! Block off the westbound lane."

An officer asks "Which officer is down?" There is no response. All is chaos as cover units howl in from all directions to the corner of Rosecrans and Dwight.

"Did that red truck have any special rims?" another officer asks.

First officer: "Ascertain whether that red truck had special rims on it or not..."

Still another officer: "Looks like he's in extremely serious condition...possibly DOA."

The dispatcher: "Red vehicle last seen southbound Tamarind from 604 South Tamarind."

The suspect vehicle is a red truck. The press will later report that Officer Kevin Burrell and Reserve Officer James MacDonald were involved in a routine traffic stop when both men were gunned down. The radio never stops; "LA Police and Sheriff's helos cross-talk with Compton's own JetCopter 28 and ground units. Using heat sensitive cameras (Forward Looking Infrared - FLIR) they determine that two candy-apple red trucks just sighted, parked a few miles from the murder scene, are too cold to have been involved. The restless blades move on.

The most tragic aspect of David's listening is revealed when the Compton dispatcher notes that she has been unable to contact any family members of the two officers: "Someone's got to go out to the house." Someone's got to wake families in the dead of night and tell them about two officers who will never protect and serve again. For the first time in twenty nine years, the Compton Police Department would lose two officers to cop killings - senseless line of duty deaths. City councilmen would weep openly, a massive manhunt would be mounted, and some days later thousands, both police and citizens alike - would attend funeral services. Officer Kevin Burrell was 29, a lifelong Compton resident, a five year veteran of the force - "he always wanted to be a cop." Reserve Officer James MacDonald, an unpaid volunteer officer on his next to last shift with CPD, was to join the San Jose Police Department as a full-time officer...he would be made a full-time police officer with Compton posthumously.

800 Trunked Fire

You've undoubtedly run into some of the craziness of monitoring

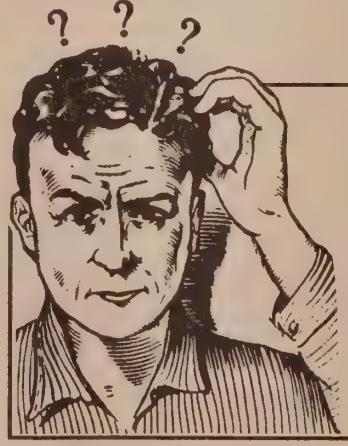
fire on trunked 800 MHz. "Engine 12 at scene, commercial structure, fully engulfed, stand by for size-up..." Bang, the mike is unkeyed and the next voice you hear belongs to a city maintenance worker: "...big pothole at Second and Main, we'll need a crew out here." Then Police, then the dog catcher and the park rangers, before finally Fire shows up again, but it's too late: "Engine 12, I copy your size-up." Rats! Your scan button finger was just too slow.

There is a way to eliminate some of the trash and keep in tune with the latest blaze without missing out on the vital details that make fire monitoring so hot. Many departments have not yet given up their conventional VHF frequencies, and some fire units have not made the change-over to 800 radios yet. In these cases, simulcasting occurs, with the 800 MHz dispatch audiobeing broadcast on the VHF freqs. Keep this in mind. Also true is the "patching" of 800 MHz mutual aid or fireground frequencies onto conventional VHF mutual or fireground freqs. This is for the convenience of assisting units who may not have 800 capability. All on-scene communications are broadcast on the VHF freqs. Keep an ear to these and you won't have to contend with all the talk from other agencies. And you won't end up with a sore scanner finger!

EMS Radio Acronyms

Somestimes it seems as if you can't play the game if you don't have a program. In the interest of brief, concise communications, many emergency medical personnel use acronyms to get their message across. Now you don't have to feel left out. Here is a list of some of the most popular.

ACLS--Advanced Cardiac Life Support
AFA-- Advanced First Aid
AFA--Automatic Fire Alarm (or Automatic False Alarm)
ALS-- Advanced Life Support
AO--Ambulance Officer
BLS--Basic Life Support
BTLS--Basic Trauma Life Support
CAD--Computer Aided Dispatch
CAMEO--Computer Assisted Management of Emergency Operations
CFR--Certified First Reponder
CISD--Critical Incident Stress Debriefing
CPR--Cardio-Pulmonary Resuscitation
CVA--Cerebro-vascular Accident
DES--Disaster and Emergency Services
DUI--Driving Under the Influence
DWAI--Driving While Ability Impaired
DWI--Driving While Impaired
EARV--Emergency Ambulance Response Vehicle
ECA--Emergency Care Attendant
ED--Emergency Department
EHS--Emergency Health Services
EMD--Emergency Medical Dispatcher
EMS--Emergency Medical Services
EMT--Emergency Medical Technician
EMT-A--Ambulance
EMT-B--Basic
EMT-D--Defibrillator
EMT-I--Intermediate
EMT-P--Paramedic
ER--Emergency Room
ERT--Emergency Response Team
EW--Emergency Ward
FAS--First Aid Squad
FD--Fire Department
FF--Firefighter
FM--Fire Marshall
ICS--Incident Command System
IV--Intravenous
KVO--Keep Veins Open
LAS--Lights And Siren
LE--Law Enforcement
MAST--Metro Arson Strike Team
MAST--Military Anti Shock Trousers
MDT--Moble Data Terminal(s)
MICN--Mobile Intensive Care Nurse
MICP--Mobile Intensive Care Paramedic
MICU-- Mobile Intensive Care Unit
MOI-- Mechanism of Injury
MVA-- Motor Vehicle Accident
PCR--Patient Care Record/Report
PD--Police Department
PHTLS-- Pre-Hospital Trauma Life Support
POV--Personally Owned Vehicle
SAR--Search and Rescue
SOG--Standard Operating Guidelines
SOP--Standard Operating Procedure
SSM--System Status Management
TA--Traffic Accident
TBF-- Total Body Failure
TC--Traffic Collisions
TIA--Transient Ischemic Attack (mini-stroke)
TKO--To Keep Open
TMU-A--Technician Medical d'Urgence - Ambulance
VRA--Volunteer Rescue Association
VSA-- Vital Signs Absent



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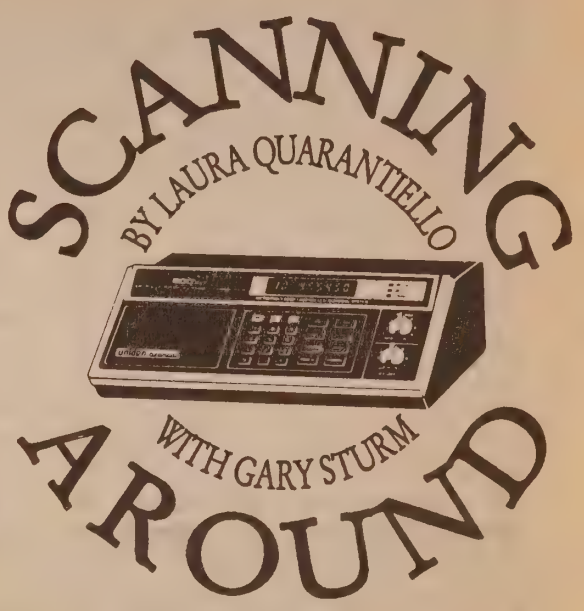
Monitoring the "Other" Telephones



Just about everyone knows that you can listen to 800 MHz cellular car phones on your scanner. All you need is a radio that has 869.00 to 894.00 MHz coverage. But did you know that cell phones aren't the only mobile telephones that you can monitor? Back in the 1940s, those who needed to reach out and touch someone from the comfort of their car used the Mobile Telephone Service (MTS).

Initially, the MTS was a rather crude affair that operated on 35 and 152 MHz frequencies. Over the years, however, it evolved and changed to the point that by the early 70s it had been renamed the "Improved Mobile Telephone Service" or IMTS. Today, the IMTS still stands despite the nearly overwhelming challenge from the cellular car phone and new facilities continue to come on the air. Tom Kneitel, in his book, Tune in on Telephone Calls, reports that IMTS base stations usually offer two-way service to their customers for about 20 miles out, limited only by the call-in distance of the mobile units (30 watts maximum power on VHF, 25 watts maximum on UHF) "Signals from the base stations can actually be copied at distances much further than 20 miles," says Kneitel and since the base stations repeat the transmissions of the mobile units, "a scanner tuned to a base station's channel would pick up both sides of any conversation."

The 37 Mobile Telephone Base Frequencies (MHz)
152.48, 152.78, 152.51, 152.57, 152.81, 152.69, 152.84, 152.495, 152.525, 152.555, 152.585, 152.615, 152.645, 152.675, 152.705, 152.735, 152.765, 152.795, 152.825, 152.63, 152.66, 152.54, 152.60, 152.75, 152.72, 454.45, 454.55, 454.375, 454.425, 454.475, 454.65, 454.40, 454.525, 454.575, 454.50, 454.60 and 454.625 MHz.

Today, IMTS car phones remain a tempting target for scanner listeners despite the fact that the electronic communications Privacy Act makes listening to the frequencies a federal offense. In addition to their use in cars, IMTS frequencies also provide telephone access for rural homes, logging camps, oil fields and other remote sites.

Railroad Crash

Two Chicago South Shore and South Bend commuter trains recently collided, killing seven passengers. It was the first fatal accident on the railroad since 1909. The CSS&SB is operated by the Northern Indiana Commuter Transportation District between South Bend, Indiana and Chicago's Loop. The tragedy occurred on the gauntlet track between Gary and East Chicago, Indiana. This gauntlet of tracks describes where the east- and westbound rails intertwine crossing a single span bridge over the current Conrail (ex-Pennsylvania) mainline. Access across the bridge is controlled by automatic signals and both engineers claim that their train had the clear signal for crossing the bridge.

Accidents on the railroads provide riveting listening as tons of metal and steel come together with an earthshaking rumble. The South Shore has no separate police channel, so their security forces were no doubt using 161.355 and also their maintenance of way channel 161.100 for communications during the clean-up operations later that day. Several larger railroads have separate wreck train (steam derrick and tender with equipment cars) channels for use in derailment clean-ups. CSXT ex-Louisville and Nashville territory uses 161.175 for wrecker crew operations. Their ex-Seaboard Coast Line territory uses 160.710 and 160.920. Railroads without dedicated wrecker channels may use maintenance of way frequencies. The only sure way to know what's in use during wreck operations is to hit the rail band and listen! Your information is always needed. Rail operations are popping up all over, send in what you monitor.

Long Haul Listening

Every summer, God provides scan-

ner listeners with a little gift. It's called "Sporadic E Skip" and what it means is that VHF and UHF radio tranmissions will suddenly and unpredictably turn up on scanners hundreds or even thousands of miles away from their intended target. For example, try listening for New York City's hard-hustling "gypsy cabs." According to *PopCom's* Chuck Robertson, these unauthorized cabs are operated "by and for residents of high crime and ethnic neighborhoods. Most have two-way radios, although seeminlgy seldom operated with the sanction of the FCC. The radio systems turn up on the darndest frequencies..." Robertson, who monitors the Big Apple Cabs from his home in Illinois, reports the following frequencies active in languages ranging from English to Spanish as well as Arabic, Russian and a variety of Asian tongues: 30.94, 30.98, 31.02, 31.06, 31.08, 31.10 (AM and FM), 31.12, 32.00, 33.00, 33.12, 33.14, 35.00, 35.01, 35.02, 35.03, 35.04, 36.00 and 36.04 MHz. "The FCC," says Robertson, "has had only very limited success in removing these stations from the air. One guess is that FCC field personnel may not be overly anxious to run investigations in the rough neighborhoods where the cabs are operated..."

Instrument Landing System

Bringing an aircraft safely down from the sky is a task every pilot faces at the end of each flight. It cannot be avoided, only practiced and sweated over until the forces that govern an airplane as it descends to earth are mastered. And each landing is a fresh chance to succeed or fail, to achieve the perfect three-pointer or bounce like a grasshopper down the runway. There are many aids to assist landing pilots, from red and white VASI (Visual Approach Slope Indicator) lights lining the runway to cockpit instruments whose needles guide a pilot to earth. The aid that you're likely to hear most often referred to over the radio is the Instrument Landing System (ILS). If flown correctly, a pilot that watches the cockpit ILS instrument needles will find himself arriving over the runway threshold at perfect speed and altitude. ILS works through an invisible "beam" projected from the threshold of the runway along the final approach path. The beam is invisible but it can be heard on your scanner. Localizers, which provide "left/right" indications, operate between 108.1 and 111.95 MHz with a Morse Code identifier. Glide slopes which provide "up/down indications operate between 329.15 and 335.0 MHz and Marker Beacons transmit a beep signal on 75 MHz.

Pilots who tune their radio navigational receivers to the appropriate ILS frequency will receive the glide slope once they intercept it between 10-15 miles from the airport. The needles on the cockpit ILS instrument will begin to move to indicate whether the aircraft is above the "beam", below it, left or right of it. The pilot's goal is crossed needles, indicating on course. If the needles remained crossed all the way to touchdown, this should result in a perfect approach and landing.

ILS's, because of their accuracy, really shine during bad weather, when a visual approach to the runway is impossible.

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Hot Tip of the Month

As you're tooling through the marine band, don't miss 156.750 MHz. This environmental channel is for one-way broadcasts from coast stations of information relating to all-important wind, weather and sea conditions. Also heard are notices to mariners and navigation hazards. If you think only mariners benefit from this, you're wrong! These broadcasts can often alert you to things taking place in other bands. A tip here might lead you to the next big story on page one of the morning paper.

DX Radio Supply's

Top Ten Selling Scanning Books

May 1, 1993

1. *Citizen's Guide to Scannning*, Laura Quarantiello
2. *Tune in on Telephone Calls*, Tom Kneitel
3. *Cop Talk*, Laura Quarantiello
4. *Maritime Frequency Directory*, Robert Coburn
5. *Scanner Modification Handbook, Vol. 2*, Bill Cheek
6. *Monitor America*, Rich Barnett
7. *Fire Call*, Tom Swisher
8. *Weather Radio*, Anthony Curtis
9. *"Top Secret" Registry of U.S. Government Frequencies (8th Edition)*,Tom Kneitel
10. *Official Aero Frequency Directory*, Robert Coburn

Richard (NC 4 AFO) and Kyle (NC 4 AFN) Petty and Norm Schrein (Mr. Scanner) at the Winter CES Show in Las Vegas, Nevada in January

Meet Mr. Scanner

at these Upcoming Radio Shows

May 22-23--Rochester Hamfest, Rochester, NY (The Dome)
June 3-6--Summer CES Show, Chicago, IL (McCormick Place)
June 4-6--Sea Pac Ham Convention, Seaside, OR (Seaside Conv. Center)
June 18-19--Albany, GA Hamfest & SouthNEt Packet Conference
July 10-11--Central Division Conv., Indipls., IN (Marion Co. Fairgrounds)
July 17-18--Atlanta Hamfest, Atlanta, GA (Georgia Int'l Convention Center)
July 24--ARRL New England Hamfest, Manchester, NH (Holiday Inn of NH)
July 31-Aug. 1--Jacksonville Hamfest, Jacksonville, FL (Prime Osborn Ctr)
Aug. 13-15--ARRL Nat'l Convention, Huntsville, AL (Von Braun Civic Ctr)
Sept. 17-19--Hamventure '93, Ventura, CA (Ventura County Fairgrounds)
Sept. 18-19--Illinois State Convention, Peoria, IL (Exposition Gardens)
Oct. 2-3--Greater Louisville Hamfest, Louisville, KY
Oct. 9-10--VA Beach Hamfest & Computer Fair, VA Beach, VA (Pavillion)
Nov. 13-14--Houston Ham-Com, Houston, TX (Adam's Mark Hotel)
Nov. 20-21--Florida State Convention, Tampa, FL (FL State Fairgrounds)

Don't Miss This One! *Take your scanner to these radio shows and scan this frequency: 145.380 MHz. The Bearcat Radio Club will have a two meter amateur repeater for hams to use. The repeater will be located at the site of the show and should be heard for miles around.*

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Ask The Experts

Q: I have recently been given a Bearcat 210 scanner. I do not know how to operate it and it was not accompanied by an owner's manual. Neither can I locate an address for the company. I would like to use the scanner. Could you suggest where I might write to obtain the material/information that I need?

-- Darryl Matter
Portis, Kansas

A: Club headquarters can furnish that manual to you for $4.00 and a self-addressed stamped envelope. Be sure to note the model as there were several versions of the 210. (210, 210X, 210XLT, etc.)

Q: I am the owner of a shortwave receiver, several scanners and a CB base station. I live in the mountains and am retired. I would like to mount a single antenna high up in a tree. My question is, is there a single antenna that would work on all of these radios?

-- Donald Rixman
Cedar Pines Park, California

A: No. Shortwave runs from .3 to 30 MHz (CB checks in at the upper end of the shortwave band) and scanners start at 30 MHz and run all the way up to 800 MHz. That's just too big of a range of frequencies for any one antenna to cover. By the way, we suggest that you abandon the idea of mounting the antenna in a tree. Believe it or not, wet tree leaves can decrease the strength of UHF signals, especially 800 MHz. Better to mount the antenna on your roof and give it a little breathing room.

Q: I was listening to my scanner the other evening when I heard officials at the White Sands Missle Range in New Mexico supervising a launch. I live in Illinois. How can this be?

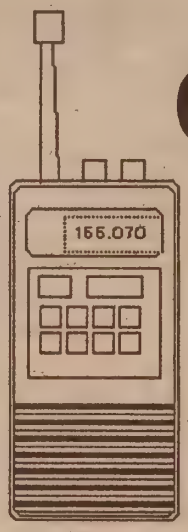
-- Ed Herwiski
Chicago, Il

A: May, June and July are peak listening time for what's called "Sporadic E skip." This means that radio signals normally destined for local reception can end up anywhere from 450 to 1,300 miles away. Listening for these distant frequencies is called "DXing," an old telegrapher's term for "distance."

Set your scanner to search wide swaths of frequencies in the 30 to 50 MHz range, kick back and listen. My best hits have been between 30 and 40 MHz. An outside antenna is helpful but not a necessity. Reception of signals from all over the U.S., Canada and even foreign countries is possible. See Laura Quarantiello's new "Scanning Around" column for more information on this fascinating aspect of the scanning hobby.

"Ed Heyer's got the frequencies!"

for Cook County, Illinois



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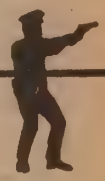

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Send Your Questions to
"Ask the Experts"
Box 360, Wagontown, PA 19376

Q: Sometimes I get so many frequencies programmed into my scanner I lose track and want to start over. How can I clear out everything at once.

-- Gerald Comer
Flint, Michigan

A: If you want to zero out the scanner and eliminate all of the frequencies that you have programmed into it, here's how to do it. (This works on many Bearcat models.)

1. Turn the scanner off.
2. Hold down the buttons for Manual, #2 and #9.
3. With all three keys held down, turn the scanner on.

Be extra certain that you really do want to clear it out. There's no turning back once you've done it.

Q: About a year ago, the Harrisburg, Pennsylvania, police department started scrambling their transmissions. Now they sound like Donald Duck and I can't understand what they're saying. For a little while a local electronics store was selling descrambling kits for about $15.00 but the police put enough pressure on them that they stopped selling the kits. Do you know of anyone who either sells a kit or has a printed circuit layout that I could purchase?

-- Larry Ierley
Elizabethtown, Pennsylvania

A: I recall hearing that Harrisburg was at one time scrambling all of their transmissions. That's a shame for police who are regularly the beneficiaries of a helping hand from concientious citizens using scanners. It also makes me a little nervous when any police department demands the right to conduct its business entirely in the dark.

It is illegal to monitor scrambled signals however the topic of scrambling is fascinating from a technical point of view. Apparently, Harrisburg is using a simple form of scrambling known as speech inversion. For those interested in learning more, Ramsey Electronics sells a descrambler kit with instructions on how to put it together. Their address is 793 Canning Pky, Victor, New York 14564.

Q: My wife claims that she can hear my scanner even when it's unplugged. Sometimes she also hears other police-like voices. Could this be possible?

-- Alan Marken
Los Angeles, California

A: Yes, it could be possible that your wife is hearing voices. No, it is not possible that they're coming from your unplugged scanner.

Q: I work at a store in the mall that sells, among other things, scanners. Do you have any flyers about your magazine that I can pass out to my customers?

--Ken Betterly
Oshkosh, Wisconsin

A: They're on their way. If anyone else is willing to help in this way, just drop me a note in care of Box 360, Wagontown, PA 19376. Direct it to Larry Miller and I'll get a packet out to you right away.

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New Products Preview

New Radio Shack Handheld

We got a call just before press time from one of our "spies" at Radio Shack. The Shack, it seems, has come out with a new scanner -- no notification of the media, no fanfare whatsoever. Here's what we know about the new addition to the Shack's growing catalog of scanners.

It's called the PRO-44, indicating that it's a handheld. The catalog number is 20-304. Frequency coverage is from 30 to 54 MHz, 108 to 174 MHz, 380 to 512 MHz with no 800 MHz frequencies whatsoever. Features include auto scan, 50 memory channels and 2 second scan delay. The PRO-44 is a dual conversion receiver and requires 6 AA batteries. Retail price is $169.95. Each Radio Shack stores has received only 2 PRO-44s.

Hang It In Your Ear

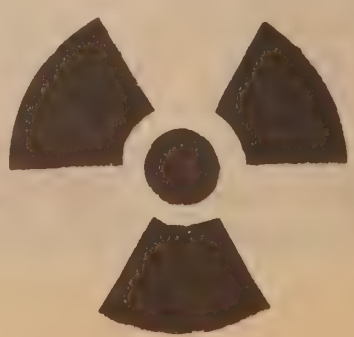
You've been there, I know you have: scanner on your belt, earplug in...when pop! Out comes the earplug. Not only do they have an annoying habit of popping out when least expected, most ear mikes don't allow for the intrusion of outside sounds, which blocks vital hearing. Sonic Communications, Inc. has solved all that with their new ESL2000 Earhanger. The Earhanger is billed as a remote audio receiver for all popular handheld radios, and is available with your choice of either 2.5mm or 3.5mm phone plug or other connector. The ESL2000 is non-invasive; it sits just over the ear, not in the ear canal. Lightweight and secure, the Earhanger provides understandable communications in heat, high noise, hazardous and harsh situations. Molded in black, this will go great with your handheld and keep the audio comfortably in your ears only. For more informationa and a price quote, contact Sonic Communications, Inc., 4 Colonial Center, Box 287, New Ipswich, New Hampshire 03071, phone 603 878-1944. Tell then you heard it in NSR.

Got A Light?

When a police officer goes to work after dark, his flashlight takes a beating. SURE-FIRE Laser Products markets an entire line of flashlights designed especially for the law enforcement officer. All SURE-FIRE lights are made of aircraft grade aluminum including the body, bezel, tail cap, reflector and switch element. They are chemically treated or plated to ensure against corrosion. Even the threaded joint is o-ring sealed. Lithium or NiCad batteries are used to deliver higher power for their size. SURE-FIRE offers three different series: P, R or N series lights. P series are lithium powered (switchable to NiCad) and are designed for military special forces, SWAT officers or patrol officers. R series are NiCad powered (sitchable to lithium) and are recommended for frequent use. N series are NiCad powered only with dual lamps and charge in-place features. All provide superior light output and are ruggedly constructed. SURE-FIRE' S products don't come cheap, but if you need reliable, lightweight flashlights, these are for you. Contact SURE-FIRE Laser Products at 18300 Mt. Baldy Circle, Fountain Valley, California 92708-6117 and ask about their flashlight, tactical light and laser light catalogs.

Nuke 'Em

Concerned about nuclear devices? Want the same reliable Nuclear Device Detectors used by explosive ordnance disposal, law enforcement and Nuclear Emergency Search Teams? Then we've got a deal for you. James Tunnell, author of the great book Latest Intelligence, is making a special offer through Nastional Scanning Reort. For only $50 (which includes shipping) James will send you a Nuclear Device Detector (NDD). Manufactured by Simpson Electronics, these all metal detectors are brand new, recently calibrated and operate on D-size batteries. Each comes with its own shoulder strap, carrying case, operating manual and an up-to-date listing of DOE/NEST radio frequencies. These units regularly sell for $300 and are not available to the public. Get 'em while there hot from James Tunnell, 5525 Olinda Rd., El Sobrante, California 94803.



Send Us Your New Product Announcements
National Scanning Report
Box 360, Wagontown, PA 19376

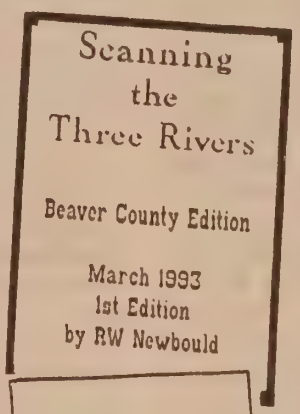
Radio Shack FM Transceiver

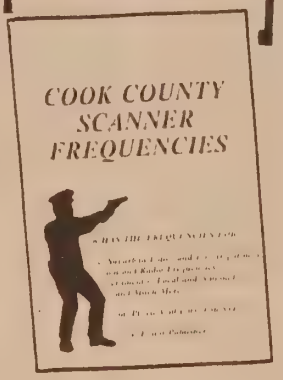
Staying in touch has never been easier. Radio Shack's Realistic PRS-100 two channel FM handheld transceivers have just been released. Operating on two frequencies in the General Mobile Radio Service Band (GMRS – 462.7125, 462.6375) these portables come with a rechargable 8-hour battery, charger, antenna and belt clip. Crystals for both frequencies are also provided. This is a slim unit with a shorty antenna. Perfect for your backpack, pocket or purse. A vaild GMRS license is required, but the license form comes with the unit and covers all of the licensee's immediate family living in the same household. Available from Radio Shack for $249.95.

RC1A Patch Cord

BMI, manufacturer of the Nitelogger Automatic Recorder Activator, has announced their newest audio recording product, the RC1A Impedance Matching Patch Cord. This cord is specially designed to provide the proper impedance match between a nominal 8 Ohm souce and a standard 600 Ohm recorder input and according to the company, works with the audio outputs of most scanners, shortwave radios, repeaters and portable radios. Attenuation (unloaded) is 20db and prevents recorder input overload, providng clear recordings. BMI says the input and poutput connecotrs are standard 3.5mm mini plugs which should make them easily compatible. The RC1A sells for $19.95 from BMI, 9445 Seven Mile Road, Caledonia, Wisconsin 53108, phone 414 835-4299.

New Frequency Directories





New Hampshire – Few scanner directories can compete with the "official" series put out by National Scanning Report writer Bob Coburn (NH-1-AAA). Based in New England, the directories cover virtually everything that operates on the scanner bands. Their accuracy is legendary, owing to a combination of official frequency data registered with the FCC and actual "hands-on" frequency research across the region: local police, fire, emergency medical plus local government, aircraft, security agencies, business radio, ski patrols, hospitals, railroads, marine radio, power companies and more.

The new 6th edition – the New Hampshire book is now out and comes highly recommended. It's over 300 pages and the price is $17.95 plus 3.50 shipping from DX Radio Supply, Box 360, Wagontown, PA 19376.

Cook County, Illinois – Ed Heyer is another Bearcat Radio Club member (IL-9-AFW) who has put together the first edition of the Cook County, Illinois frequency Directory. Ed's book is a first class job that's packed with good information – a lot of whch comes about through the fact that Ed's a retired police officer. We give this hot new 52 page book a "thumbs up." The price is $14.95 plus 2.50 shipping from Ed Heyer, 1800 S. 48th Ct., Cicero, Illinois 60650.

Western Pennsylvania – Rich Newbould, who a few months ago produced an excellent scanner frequency directory for Allegheny County, Pennsylvnia, has expanded his range of coverage to five other western PA counties. In addition to Scanning the Three Rivers – Allegheny County Edition, Newbould now offers the following titles. (County, number of listings, post-paid price)

Westmoreland, 2200, $16.00
Beaver, 700 , $ 7.00
Washington, 700, $ 7.00
Greene, 200 , $ 4.00
Fayette, 600 , $ 7.00

Although Newbould is not a club member, we can still recommend the books to you. All five of the new frequency directories live up to the high standards of the original book.

To order, send a check or money order to R.H. Newbould, 3179-A Churchview Ave., Pittsburgh, Pennsylvania 15227. The complete set, including the original Allegheny County book ($25.00 postpaid) is $50.00.

Ride Amtrak with a Scanner – You can add a new dimension to rail travel this summer by picking up a copy of *Trak Tables: A Scanner's Directory of Amtrak Road Frequencies*. It's a handy little 48 page guide that has easy-to-read tables showing Amtrak route numbers, train names, departure and destination and the frequencies that are used.

Trak Tables is a neat little book that's arranged by train number. You can get a copy in time for summer travel by sending $7.00 (postpaid) to Three Rivers Press, P.O. Box 70285, Bellevue, Washington 98007. Mention National Scanning Report when you write.

Scan Rail – Another railroad frequency book for scanner listeners is now available. Produced by third

generation railroad man Bruce Heald, the 66 page book lists all American railroads and all their frequencies with use designators. The information is presented in alphabetical order and is also cross referenced.

Quoting the author: "No pretty pictures or gussy covers here. Just good frequency information..." The man don't lie. It ain't pretty. But it does work. To get your copy, send $9.95 (postpaid) to *Heald's Scan Rail*, 6886-A, Jefferson Street, North Branch, MI 48461. Tell him you read about it in *National Scanning Report.*

Can't We Talk About This?

For a law enforcement officer, verbalization is a vital to well-being as the gun and handcuffs. A good commnicator can often defuse a potentially voliatile situation before it escalates into something dangerous. Research shows that communicating is not only done through words, but through body language as well, and Performance Dimensions Publishing has produced a video to help officers improve their communications skills. *Interpersonal Communications Skills*, a 29-minute video, contains dramatic reanactments that emphasize the necessity of proper verbalization skills. Of use to both police officers and civilians, and priced at $29.95 (plus $3 shipping) *Interpersonal Commuunications Skills* is available from Performance Dimensions Publishing, Box 502, Power Lake, Wisconsin 53159-0502, phone 414 279-3850.

PSST!

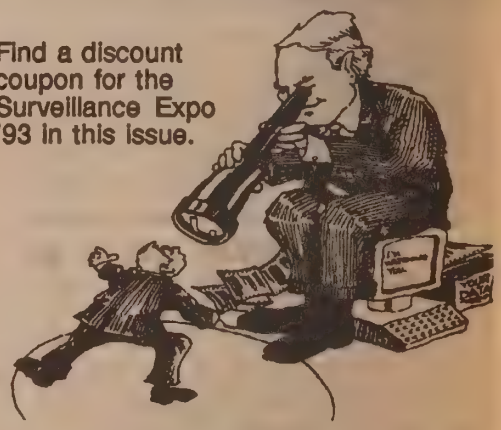
Serious about surveillance? Then look no further. Well known surveillance specialist, Lee Lapin, the man who told you *How to Get Anything on Anybody* is back with two new technical texts. *Hands-on Electronic Surveillance* walks you through the design and placement of audio surveillance systems, transmitters, receivers and integrated systems, mike placement, gain antennas, correct use of body wires, listening post set-up, equipment and more. *Hands-on Countermeausures* tells how to protect yourself from the latest threats of electronic surveillance, from room and telephone weak points, bypass techniques, tap installation, countermeasures gear, RF detectors and spec analyzers, to techniques for defeating and discovering office, home and telephone surveillance.

Lapin's style is tight and straight to the point from page one. He pulls no punches and you'll walk away from these two books with a solid understanding of electronic surveillance and countermeausres work. These aren't overviews, they are nuts and bolts for the serious investigator. Both books are available from Intelligence Incorporated, 2228 South El Camino Real, San Mateo, California 94403, 1 800 247-6553 for $22.95 each plus $5 shipping per order.

Spies Like Us

If you feel like donning your trenchcoat and taking a look at some high-tech surveillance gear, try Surveillance Expo '93 held at the Hilton in McClean, Virginia. The fifth annual international security showcase begins August 9 with a kickoff dinner featuring G. Gordon Liddy and continuing August 10-12 with exhibits, conferences and seminars. The final day, August 13, features a covert video surveillence seminar. The last show features a TV camera that pans, zooms, tilts and rotates electronically without moving, a radio bugging transmitter in a 1/4 in. cube, a TV camera in a man's necktie and another that fits in a beeper box. If you're interested, write Surveillance Expo '93, Box 20254, Washiugton, D.C. 20041 or call 202 331-1125 for more information.

Find a discount coupon for the Surveillance Expo '93 in this issue.



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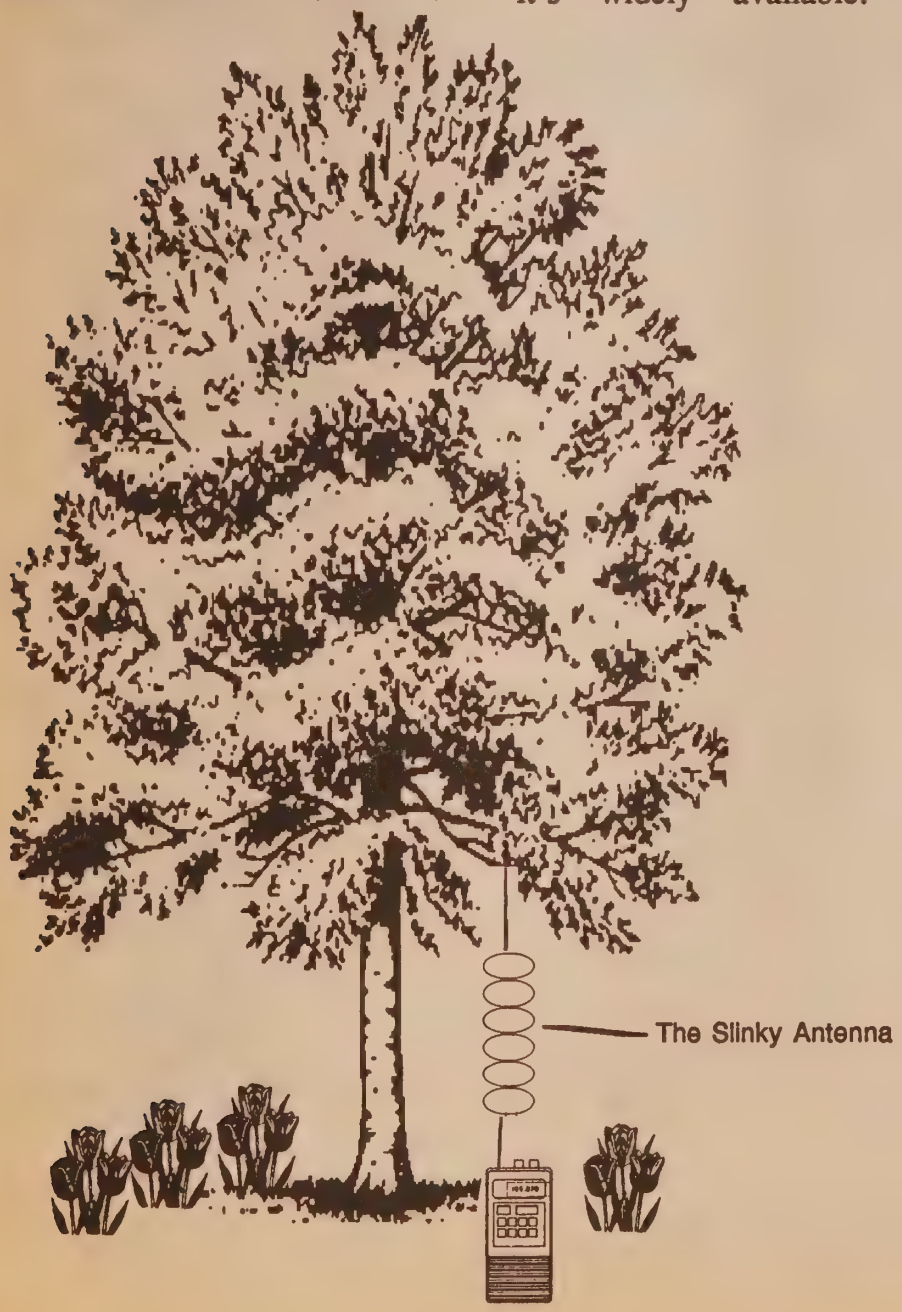
Simple Scanner Projects

Making a Slinky Antenna

Everyone knows the benefits of an outside antenna. The difference between the stock telescopic whip or even the rubber duckie that comes with your scanner and a an outside antenna is, well, dramatic. Unfortunately, not every situation allows you to take along a Scantenna. At 7 foot in height, they're sure not to be popular at a family picnic. So what's the serious scanner listener-on-the-go to do? Buy a toy.

The toy you need to look for is an old favorite and it's widely available. It's called a "Slinky." And while it's inventor's probably never dreamed of its value as an antenna, believe it or not, it makes an excellent one. Keep in mind that there are several models of slinky toys. You're looking for a metal one -- sadly, there are even plastic slinky look-alikes -- with a diameter of about 1 3/4 inches.



Here Are The Plans

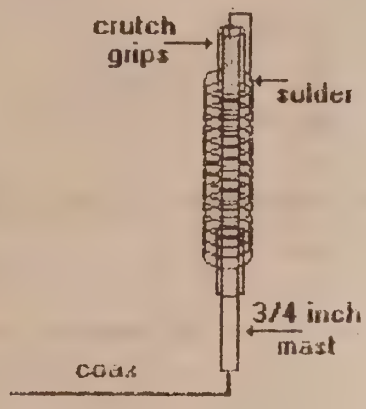
The plans for making a slinky antenna are simple. Even if you don't know which end of a soldering iron to hold you'll have no problems here because you don't need to do any soldering. All you do it take a piece of string and tie it to a tree branch. At the other end, use an insultated alligator jumper (available from your local Radio Shack or electronics store fo under a buck) from the bottom end of the slinky to the center connector of your BNC connector. Jerry Pickard, Editor of the *Dreaded Mod Sheet News* says that it's "perfect for a 'pocket' antenna [and] superior to most 'duckies.'" Says Jerry, "It's primitive but it works good."

A More Ambitious Slinky

Pickard, who is given to bouts of tinkering and experimenting, once built a helix antenna using a Slinky toy. (See drawing, opposite page.)

Beside the Slinky, the parts list included a metal mast insulated with vinyl tape and a couple of crutch handles to

mast and grounded the braid to the mast, and soldered the center conductor to the Slinky at the top end." Pickard uses this antenna to provide a very reasonable signal for his PRO-2020, the scanner he uses to monitor the new media.



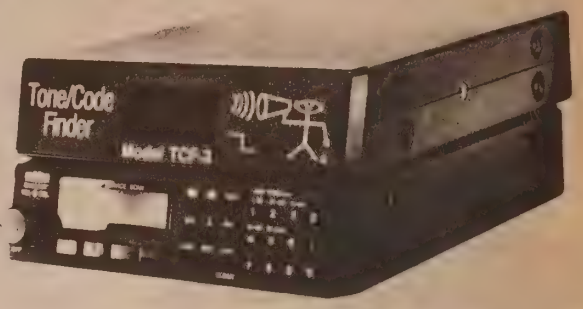
Member's Classified

For Sale: Uniden BC 70XLT. 20 channels with leather case, charger, antenna, battery. Bought in December. Call Mike Natter, NY 2 AAG (516) 349-0569.

Classifieds are free to Bearcat Radio Club members.

Tone/Code Finder

Model TF-1
Model TF-2
Model TCF-3



The Tone/Code Finder is composed of a high speed display unit mounted to a scaning receiver. **ITS PURPOSE IS TO INSTANTLY FIND AND DISPLAY ALL CTCSS AND DIGITAL CODES, INCLUDING SPLIT CHANNEL AND INVERTING CODES.**

On board memory retains all hit and time information which is then transferred to a printer or computer via a RS 232 port upon command. Time is stored in seconds and hits in units. In the event of power loss, the **FINDER** will maintain memory for up to three weeks.

Signal processing is accomplished by an eight pole filter configured as a low pass with a cutoff of 234Hz. The superior filter characteristics eliminates chopping and false reading.

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SPECIFICATIONS:	TF-1	TF-2* or TCF-3*
Companion Receiver	BC560XLT	BC950/760XLT
Frequency Range	up to 512 MHz	up to 950 MHz
Size	5 1/2" x 6 7/8" x 3 1/2"	6 5/16" x 7 3/8" x 3 1/4"
Weight	2 lb. 12 oz.	3 lb. 4 oz.
Power Source	115VAC or 12VDC	115VAC or 12VDC

Can be configured as a stand alone unit or coupled to other receivers.

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-- Bob Schwerdtman, Ingleside, IL

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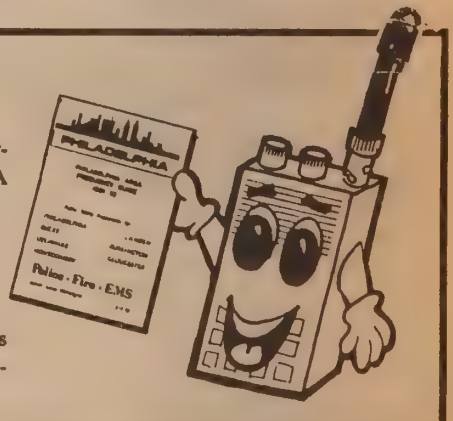
Send check or more order for $12.95 postapaid to Louis Campagna, 8001 Castor Ave., #143-NS, Phila., PA 19152-2701. (PA res. add 6% sales tax.).



Unmasking the Phantom Frequencies

with Gene Hughes

SCANNER SCHOOL

If it were up to us, it would be against the law for scanner owners to use the SEARCH button until they learned about "images," "sidebands" and "false frequencies." Over the years, we have received hundreds of letters telling us about "new, unlisted frequencies" found while using SEARCH, few of which actually exist. We've even seen these printed in magazine scanner columns, whose authors wouldn't know a squelch knob from a door knob.

Here are some excerps from letters we have received just within the past few weeks:

"Here's a new frequency for the Portland, Oregon, Police – 481.800 MHz."

"There are cellular phone calls in the 860–869 band"

"Your book is incorrect. You show the Waukeshau fire department on 154.310. The right frequency is 154.305."

"Our police are moving from 453.250 to 853.250. I heard them."

All four are incorrect! The writers found these "non-fre- quencies" while using SEARCH. If they are wrong, what were they hearing? That will be our subject for today. Each of our explanations will be in two parts. First, we'll tell you what happened. Then, for those of you who are interested, we'll tell you why.

Images: What?

An image frequency is like a mirror reflection of a real frequency, and is heard when tuned to a different frequency. In your scanner owner's manual, find the page that lists the specifications. Look for the Intermediate Frequency (IF). Several may be listed, but one of them will be 10.7 MHz or 10.8 MHz. Whichever one it is, double it so that you get 21.4 MHz or 21.6 MHz: the Image Difference for your scanner (illustration 1).

The Image Difference is the difference between an image and a real frequency. The next time you find a "new and unlisted" frequency, especially in the UHF or 800 MHz band, try switching back and forth between the Image Difference. If they are identical, then what you have found is an image. In the case of our reader from Portland:

481.800 MHz Image
- 21.400 MHz Image Difference
= 460.400 MHz,
correct Portland frequency.

Images: Why?

In order to explain images, we have to explain Frequency Mixing first. Bear with us! It's not as complicated as it sounds. If you have a piano or a keyboard, play the note "A" above "Middle C", which produces a tone of 440 cycles per second (cps). Now play the note "A" that is two octaves higher, which is 1760 cps. What happens when you strike both keys at the same time? Listen carefully and there will be four different tones! You will hear 440 cps and 1760 cps, as expected. You will also hear the sum and the difference of the two:

1760 cps - 440 cps = 1320 cps
1760 cps + 440 cps = 2200 cps

You mixed two audio frequencies and got four. The same thing can be done with radio frequencies.

Your antenna captures thousands of radio signals, and sends them on to your scanner. When you "tune in" a frequency, what your scanner is really doing is "tuning out" all the other frequencies, while amplifying the one you have selected. This amplification takes place in several stages, each one boosting the signal. To keep all of the stages from also amplifying the unwanted signals, they have to be tuned to the desired frequency. Retuning each stage would be a complicated procedure. Early on, it was realized that the process of rejection and amplificaton had to be simplified. What if all the stages could be factory preset to operate at just one frequency, regardless of the frequency that was selected for listening? In 1918, Edwin H. Armstrong invented a way to do this, and the Superheterodyne system was born. It is now used in all radio and TV sets. The radio signals from the antenna first enter the radio frequency (RF) stage, also known as the "front end" of the receiver. Usually, there is a different RF stage for each band, so that frequencies from all other bands are filtered out. If it returnes with each change of frequency, it will also filter out many in-band stations (illustration 2).

Next, we get to Mr. Armstrong's brilliant idea. Within every radio and TV receiver, there is a very tiny, weak transmitter, known as a Local Oscillator. When a scanner (or any radio) is tuned, it is really the local oscillator that is being tuned, but to a frequency different from that shown in the window! It will depend on the IF of your particular scanner, but for this example, we will use an IF of 10.7 MHz. Suppose you want to receive a frequency of 100.0 MHz (an imaginary frequency we will use to make the math easier to follow). When the radio is tuned to 100.0 MHz, the local oscillator is actually tuned to 89.3 MHz. This happens to be exactly 10.7 MHz below the wanted frequency. The 89.3 MHz

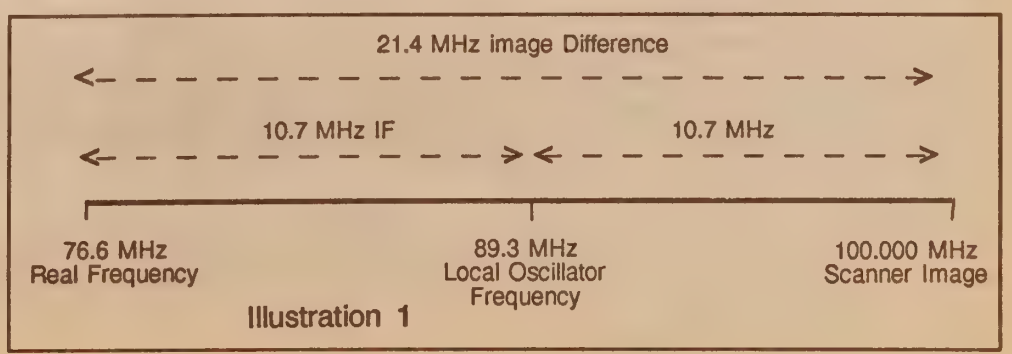


Illustration 1

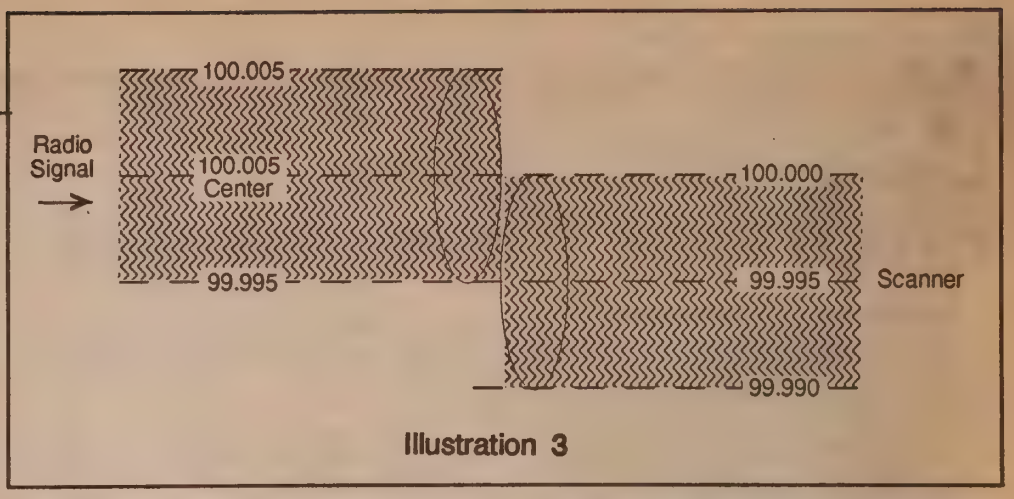


Illustration 3

signal is injected into the path of all the incoming frequencies at the mixer stage. One of these incoming frequencies is 100.0 MHz. When 89.3 MHz is mixed with 100.0 MHz, four frequencies are produced (remember our example of the piano?):

100.0 MHz
89.3 MHz
189.3 MHz (100.0 + 89.3)
10.7 MHz (100.0 - 89.3)

(See illustration 2).

The factory has pretuned all of the following stages to amplify 10.7 MHz only, and reject all other frequencies. These stages are called the Intermediate Frequency (IF) stages because they are between the RF stage and the audio amplifying stages. To recieve 500.0 MHz, the local oscillator would tune to 489.3 MHz, and again, the mixer would produce an IF of 10.7 MHz (500.0 - 489.3 = 10.7).

While Mr. Armstrong solved a big problem, he created a small problem: images. let's go back to our example of the 100.0 MHz signal. The local oscillator is tuned to 89.3 MHz, and mixing produces 10.7 MHz. Is there any other frequency that 89.3 MHz could mix with that would also produce 10.7 MHz? We have three, and there should be four. Let's see:

89.3 MHz (local oscillator when radio is tuned to 100.0 MHz)
minus 10.7 MHz IF frequency
= 78.6 MHz!

Aha! If a signal on 78.6 MHz was so strong that it could get through the RF stage, it would mix and go through the IF when our window read "100.0 MHz." Notice that the difference between 100.0 MHz and 78.6 MHz is 21.4 MHz, our old friend the "Image Difference."

Have you noticed that the primary frequencies in the 450-470MHz band are spaced like this: 450.000, 450.025, 450.050, etc.; while above 470 MHz the spacing is 471.3875, 471.4125, 471.4375, etc.? This is to avoid the problems of images. For example, the image of 450.000 would be 471.400, which is not an FCC allocated frequency.

When you find what appears to be new frequency, you should do two things: Check with a current and reliable frequency directory to see if such a frequency exists, and then try the Image Difference to see if they are the same.

Sidebands: What?

Your scanner will not only receive the frequency you tune, it will also recieve frequencies that are close; within 0.005 MHz and up to 0.010 MHz away. Many scanners, in the Search mode going up, will stop at 99.995 MHz, or even at 99.990 MHz. or 100.010 MHz. Better quality scanners have a circuit that recognizes an off-frequency condition, and automatically moves on to the correct frequency.

One way to test is to also enter the next 0.005 MHz up (or down) to see if you hear the same thing. If the reader from Waukeshau had also tried 154.310 MHz, he would have found the same station. If he had also consulted a reliable frequency directory, he would have discovered there was no such allocation as 154.305 MHz anywhere.

Here is a way to test your scanner to determine how wide the "window" is. Choose a station in the 148 – 174 MHz range that is strong and heard steadily or quite often: a weather station would be a first choice. We'll use 162.550 MHz as an example. First, enter a frequency 0.005 MHz above the selected channel and then 0.005 MHz below (162.545 and 162.555 in our example). If you hear the station just as clearly (or almost) as if you were on the frequency, your scanner is normal. If one of the two sounds fuzzy, your local oscillator may be off frequency. Now try the frequencies 0.010 MHz higher and lower (per the example, 162.540 and 162.560). The signal should very fuzzy or not heard at all. If the signal is clear on both, or just a bit fuzzy, the window of your receiver is very wide.

Sidebands: Why?

Try to think of a radio signal as being like a flashlight beam. The light is not just a tiny dot, but a wide beam. The same holds true for a radio signal. A signal on 100.000 MHz (the center frequency) spreads out as much as .005 MHz on each side, from 99.995–100.005 MHz. Everything else except 100.000 MHz are sidebands. In order to let the radio "beam" in, the receiver is like a window: it will receive frequencies just a little bit on each side of the exact tuned frequency. In addition, because there is the possibility that the receiver circuits may not be 100% accurate, the "window" is made a little wider than needed just for the frequency and its sidebands. Here is what happens in the Search mode: As soon as the sideband ("beam") enters the receiver ("window"), the searching will stop, even though the center of the frequency being received (like the middle of the light beam) is not the exact frequency being tuned (middle of the window).

Some Final Advice

A reliable and current frequency directory is a must. Check the copyright date. It should be recent . If you think you've found something new while searching, verify that it is not an image, sideband or false frequency. A good directory will have a list af all the real frequencies authorized by the FCC.

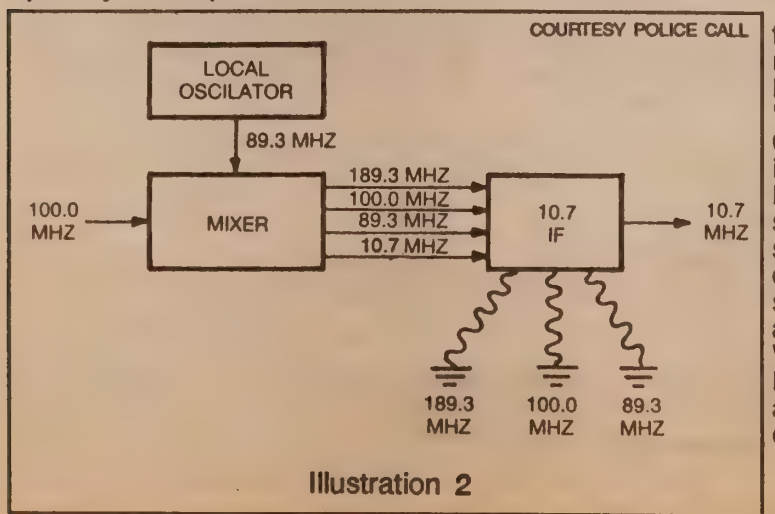
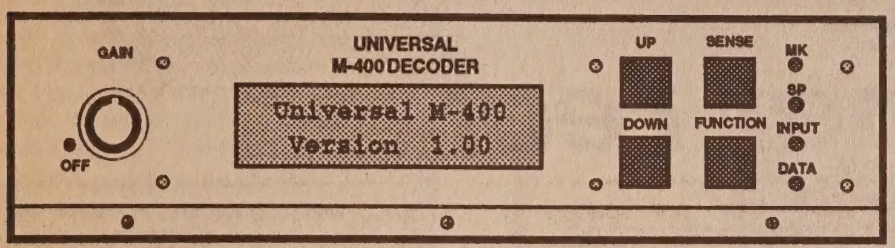


Illustration 2

The Ultimate Accessory for Every Shortwave & Scanner Enthusiast

UNIVERSAL M-400



Many early teletype listeners started their monitoring hobby with code readers. However, readers have fallen out of favor in recent years because of their limited performance, limited mode coverage and lack of features. The M-400 reverses this trend, providing a high quality demodulator, extensive mode coverage, state-of-the art display and parallel printer port. The Universal M-400 incorporates capability never seen in a reader before. It is the ultimate affordable accessory for the SWL and the scanner enthusiast.

The M-400 provides all the benefits of a reader, without the limitations. The M-400 is totally self contained; there is nothing else to buy. It is compact and operates from 12 VDC making it a natural for auto or boat installations. The two line liquid crystal display provides a (40) forty characters readout (not just 8 or 16 like other readers). This super-twist LCD can be read from any angle, and the front of the M-400 is sloped to provide the optimum in viewing and operating convenience. LED indicators for *Mark, Space, Input* and *Data* are provided. A gray, all-metal cabinet provides a solid look of quality. For the shortwave listener, the M-400 provides all the standard reception modes ... and then some.

● **SHORTWAVE MODES**
- **Baudot,** the original RTTY mode, can be copied in all five speeds (45, 50, 57, 75 and 100 baud). Baudot is used by some press agencies and weather stations.
- **SITOR A and B** are extremely popular teletype modes on shortwave. SITOR is used for communications between ships and coastal stations.
- **FEC-A** is a new press-diplomatic mode gaining wide acceptance primarily in Europe. Extensive FEC-A traffic can be monitored in North America during the day.
- **ASCII** at 75, 110 and 150 baud.
- **SWED-ARQ** This Swedish diplomatic mode can be copied in the U.S.A. during the day.
- **FAX** - That's right; with a graphics compatible parallel printer attached, you can copy FAX from shortwave. You can print weather maps and charts from around the world. The printer is optional. (FAX decoding is at 120 LPM, 576 IOC).

● **VHF-UHF MODES** will be enjoyed by the scanner enthusiast.
- **ACARS** Stands for *Aircraft Communications Addressing and Reporting System.* This new aviation teletype mode is in wide use at most major airports. Extensive traffic can be copied from both nearby commercial airports and aircraft. The M-400 is the first unit to offer this capability.
- **GOLAY** digital pager mode.
- **POCSAG** digital pager mode.
- **DTMF** decoding of all 16 DTMF digits.
- **CTCSS (PL)** frequency decoding is also available. Read all 41 standard tones.
- **DCS** (*Digital Coded Squelch,* also referred to as *Digital Private Line*) all 104 standard codes.

The M-400 has several functions that you can program. With the use of an optional speaker, the M-400 can be programmed to pass only the audio you want to hear! You can set the M-400 to only activate the speaker when it receives a CTCSS, DCS or DTMF code of your choosing. The M-400 comes with an instructive *Owner's Manual* and a wall adapter that provides 12 VDC. One year limited warranty. Manufactured in the U.S.A. by Digital Electronic Systems. The M-400 is *the* affordable accessory for every shortwave or scanner enthusiast. Available now for only **$399.95** (+$6). Order *#0400.*

RECEPTION MODES

- **RTTY Baudot**
  45, 50, 57, 75 and 100 baud.
- **SITOR A**
  ARQTOR, Amtor A
- **SITOR B**
  FECTOR, Amtor B, NAVTEX
- **ASCII**
  75, 110 and 150 baud.
- **SWED-ARQ**
  3, 9 or 22 character groups.
- **FEC-A**
  96, 144 and baud.
- **Facsimile (FAX)**
  120 LPM 576 IOC
- **POCSAG**
  Digital pager mode.
- **GOLAY**
  Digital pager mode.
- **ACARS**
  VHF Aviation teletype mode.
- **DTMF**
  16 digits
- **CTCSS (PL)**
  41 standard frequencies
- **DCS (DPL)**
  104 standard codes

SPECIFICATIONS

Dimensions	8.75"W x 2.5"H x 8"D
Weight	2 Lbs. (5 Lbs. ship with PS)
Display	LCD two line 40 char. total
Filter Tones	Low tone (mark = 1275 Hz)
	Fixed: 170, 425 and 850 Hz
	Variable: 100 - 1000 Hz
Power	11-16 VDC @ 200 ma
	AC wall adapter included.
Speaker Input	4-16 Ohms 100 MW max
	Mono mini jack (1/8")
Discriminator Input	10K Ohms .25V max
	Mono mini jack (1/8")
Speaker Output	Mono mini jack (1/8")
Printer Output	Parallel ASCII 8 bit Centr.

★ HUGE FREE CATALOG ★

Universal offers a new communications catalog covering shortwave, amateur and scanner equipment. There are also antennas, books, parts and accessories. This informative **100 page** reference covers everything for the radio enthusiast. With prices, photos and full descriptions.

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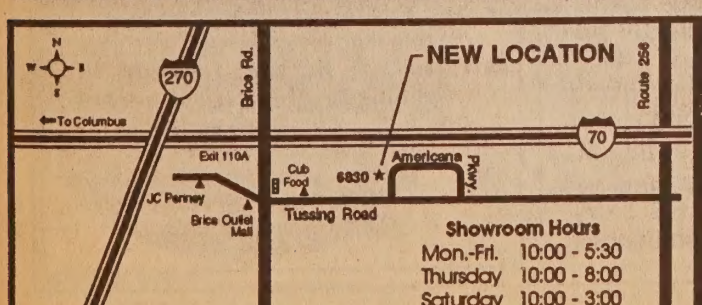

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Things That Work

The Realistic 2028

Big Scanner Feel

By Laura Quarantiello

The folks at Radio Shack have been busy and one of their latest creations is the Pro-2028 base scanner. As a user of Radio Shack products for years -- I started out with a Pro-2020 -- I've watched the state of this company's art evolve. The newly hatched 2028 incorporates some of the characteristics that are becoming standard on scanners: search feature, priority, instant weather access, monitor memories, lockout, memory backup. These features give the 2028 a "big" scanner feel and are definite assets to the serious scanner monitor.

Band coverage on the Pro-2028 is 29-54 MHz, 108-136.975, 137-148 MHz, 148-174 Hz, 406-420 MHz, 420-470 MHz, 470-512 MHz. Absent are the 225-400 military aircraft/satellite band and the 800 MHz band. For those, you'll need to step up to a another model. On the plus side, there is complete air band coverage, including the new extended aero band (136-137) and solid VHF federal government coverage. These two bands are often hacked off at some point, but the 2028 doesn't skimp. 50 channels in ten banks of five each does the job nicely for the beginning scannist, and is a nice change from the 10 or 20 channel capacity of other lower end units. The unit is very light, just 2.2 pounds, and matte-black sleek. It sits there just daring you to punch up the latest airwave action, and if you're a purist, you will.

The volume and squelch controls work smoothly and the twenty four pill-shaped buttons on the panel respond well to flying fingers. The backlit LCD display is tilted forward to prevent Scannist's Neck, that combination of fatigue and pain that comes from craning forward to see the frequency display. After a few hours, it comes in handy, believe me. Reception is solid all across the bands with the supplied extendable antenna, with only a mild tendency to hit on images using an external ground plane antenna. These are easily bypassed. The manual lists fourteen channels per second scan speed, and if there were more than 50 frequencies, it would be a bit slow. As it is, it's just right. The top-mounted 2¼ inch, 8 ohm speaker driving 1.3 watts at maximum output sounds very good. Adding an external speaker doesn't appreciably improve things, and that's saying something.

There are jacks for an external speaker (1/8" mini-plug) and antenna on the back panel. The antenna connector is a Motorola type and will require an adapter (RS Cat. #278-208). I had a hard time finding this adapter in my area, but Thomas Coyne, one of the nicest Shack guys you could ever meet, went out of his way to see that I had one for this review.

The 2028 is designed for base use and comes with a DC 12V power supply. There are no provisions for mobile use, but I don't doubt that it could be done if you're so inclined. Good performance, nice reception and sound, and best of all, it's easy for a beginner to learn without being confusing. As you can guess, I enjoyed my time with this unit. Give it a try.

Got my first issue of NSR. Loved it. If I could I would like some back issues to read and LOVE.

Larry K. Shideler, Cincinnati, Ohio

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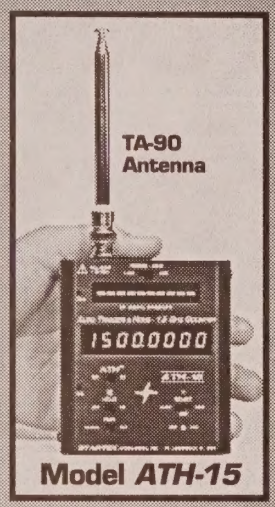

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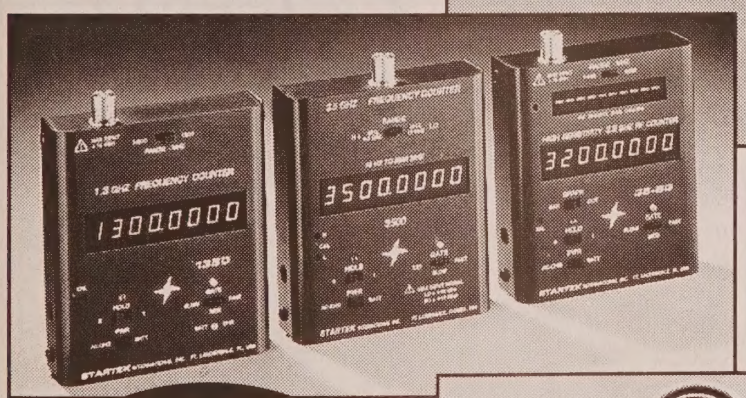

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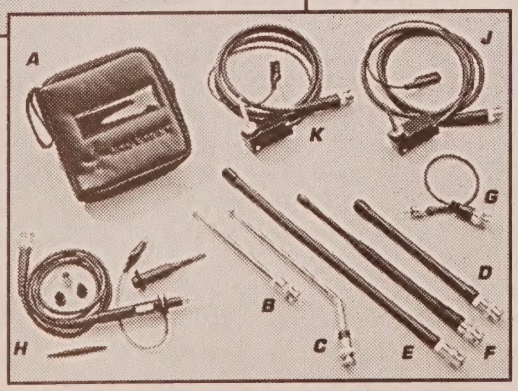

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B ***TA-90***	Telescope BNC antenna	12.
C ***TA-90-L***	Telescope elbow antenna	16.
D ***RD-150***	150 MHZ rubber duck	16.
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